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The Architectural Education of the Public.

IT has become almost a commonplace among those architects who take a serious view of their art, and regard it as something more than a means of making a respectable living, that there can be little hope of a general improvement in the standard of architecture in this country until there is a general public desire for better architecture, grounded on a more cultivated perception as to what architecture really means. It may perhaps be suggested that artists of every class are prone to think lightly of the public appreciation of their own art; and that architecture is no worse off in this respect than painting or sculpture. Admitting this to a certain extent, there is nevertheless some ground for considering architecture as a subject in which the public are specially in need of instruction. There is unquestionably a better general perception as to good and bad in regard to painting and music, for instance, than in regard to architecture, and there is, among well-educated people at all events, a respectable public opinion in regard to those two arts. There is far less in regard to sculpture; and in England at all events this art perhaps fares hardly better than architecture, so far as general comprehension is concerned: and for much the same reason. Sculpture is a much more abstract and less realistic art than painting. Architecture is more abstract than either, and appeals to a more purely intellectual perception. But commissions for sculpture are given commonly by persons who have some love of the art and some idea what they want from it. Architectural commissions are in many cases given by those who have only a utilitarian object in view; or who, if they have any idea of architecture before their eyes, only wish for a building which answers the requirement of being correctly designed according to one of the styles which they have heard of, or which modern custom has accepted as correct. Whether this latter system produces anything better than a mere utilitarian building depends almost entirely on the architect. If he is a man with the feeling of an artist, and who is something of an enthusiast in his work, he will put into this merely imitative architecture a degree of refinement which will give it interest and value. If he is not, he will merely produce a bald and perhaps coarse imitation which will have no value or interest at all, but which will in all probability satisfy his client as well as anything else.

How are we to influence the public to care for, to demand, something better in architecture than this? For until they do demand it, there is little probability of a general improvement. This consideration forms the subject of two of the papers in the recently issued volume of the Transactions of the National Art Association; the second volume of the series, containing the papers read, and some brief notes of the discussions, at the Congress held at Edinburgh last November. We devoted some space to noticing the proceedings of the Congress at the time, and have no intention of going over old ground again. But the appearance and form of the volume recording the proceedings at that Congress deserve in any case a word of recognition. The volume, printed by the firm of Constable, is got up in such a manner as to render it worthy to be the record of an Art Congress. Not that there is any display about it, or anything elaborately ornate in the binding or decoration; but it is a thoroughly well-printed book, with a good type, a wide margin, and a study to arrange the page so as to produce a generally satisfactory effect to the eye. It is a book which not only contains a great deal that is worth reading, but one which is thoroughly agreeable to the eye, and presents a marked contrast in this respect to the printed page of the ordinary English books of to-day. The Editing Committee have done well thus to make their volume, a record of an Art Congress, in itself a work of art in the manner in which it is got up, thus rendering it a practical exemplification of one minor form of art, and one which is in general greatly neglected in the present day of rapid and voluminous putting forth of books. The whole spirit of the teaching comprised in the papers read at the two Congresses already held is to inculcate the idea that art does not consist in the production of pictures and sculpture only, but that the artistic spirit may be and should be shown in all forms of work; and the Edinburgh volume of Transactions is in itself a most praiseworthy example of this spirit.

Having done this justice to the form in which the volume is produced, we will devote the rest of our remarks upon it to the papers which deal with the subject which is of the most direct interest to us, the means of developing and improving that general knowledge of architecture in which the English public is at present so deficient. This is dealt with in two papers under the heading "The architectural Education of the public," by Mr. Campbell Douglas and Mr. G. S. Aitken respectively. Of these two papers, the latter is the most direct and practical; both to some extent take the same ground, that architecture should be made a portion of general education, but the method of doing this is more practically dealt with by the latter writer.

Accepting the fact that the English public know little of architecture, as one on which all persons are agreed (for the average Englishman, so far from denying his ignorance of architecture, is disposed rather to boast of it), the two questions to be asked are, what is the reason for this exceptional ignorance, and what is the remedy for it. Mr. Douglas suggests, in regard to the first point, that the mere fact that architecture of some kind is one of the daily surroundings of all persons' lives leads them to think that they know all about it. All people are not brought up in the midst of collections of paintings or sculpture; but all dwellers in towns are brought up in the midst of collections of buildings, many of them more or less architectural in character; they are familiar with cornices and pilasters as every-day incidents, and cannot see that there is any mystery in the matter which should make it necessary for them to study it, and "people do not set themselves to learn anything for which they do not see any good reason." The result of this general familiarity with certain every-day forms of architecture is the same kind of acquaintance with it that the man had with literature, who found he had been "talking prose all his life" without knowing it. That man would probably have had little or no perception of refinements of literary style, nor would the man who had seen buildings every day of his life have necessarily any perception of the refinements of detail which make the chief difference between good and

bad architecture. He would recognise a general drawing of a columnar building as representing what he had seen; but if you were to show him drawings of various details, base-mouldings, ornamental details, &c., he would be quite unable to say whether these were correct or not, just as the man who had talked prose by habit would be unable to define correct grammar; or, as Mr. Douglas puts it, just as we might receive a general impression of passion and eloquence from a speech in a foreign language imperfectly understood, but without being able at all to discriminate whether it was good or elegant French, or German, or Italian, that we had been listening to.

That is the position in which average persons stand in regard to architecture; it is a foreign language of which they have only a general impression, without any knowledge of style or of grammatical construction. Mr. Douglas accordingly suggests that they should be taught the grammar of architecture. But is there a grammar of architecture? The phrase sounds well, but it will be rather difficult to tack a precise definition to it. Mr. Douglas puts it in this way:—

"The grammar of architecture consists largely in the intelligent use of such special features of style, arrangement, and shape of mass, as are found in piazzas, domes, minarets, campaniles, towers, spires, &c.; but in those styles with which we have chiefly to do it consists mainly in the judicious use of such mouldings as those who are masters in the styles have employed, thereby imparting a certain individuality and mode of architectural thought to that style."

This is rather vague, especially the term "judicious use," one of those useful phrases which it is always safe to employ, and which may mean anything. The writer goes on to illustrate his meaning by referring to the distinction between a Classic Corinthian capital and an Early French Gothic one; the man with only a general idea of architecture would regard them as much the same thing; the man who had studied detail at all would see a radical distinction in their mouldings and style of leafage design. But this is a perception as to delicacies of style; it is hardly analogous to grammar. Grammar, in language, is the arrangement and relation of words so as to correctly represent or symbolise processes of thought. To say "there is no houses" is bad grammar because it uses in one part of the sentence a word implying unity, and in the other a word implying plurality of the objects named, and these ideas are mutually exclusive and cannot be entertained together. But it can hardly be said that there is anything in architecture analogous to this intellectual necessity for correct grammar in dealing with mental processes. It has been thought incorrect and bad style, by some critics, to use coupled columns in Classic architecture; but their use does not suggest mental ideas which are mutually exclusive. As has often been pointed out by our ablest writers on architecture, there may be good or bad logic in architectural design,—the use of external features, for instance, so as to imply an interior plan different from the actual one; but this is not the same kind of fault as a grammatical one; bad logic may be expressed in perfectly good grammar. As far as architecture in general is concerned, therefore, it may be said that there is no such thing as a grammar of it to be taught. But there is something like a grammar of separate styles of architecture, or perhaps we should rather say each has its own idiom. The best and most consistent styles of architecture that have existed depend for their consistency and harmony of effect on the observance of a variety of rather minute refinements of detail, of which mouldings are the most important and, it may be added, the least understanded of the people.

These elements of refinement and consistency of style are capable of distinct illustration and definition, and can be taught as a branch of knowledge, giving people a correct perception of the characteristics of various styles, taken separately. To give instruction in architecture on this principle is easy enough, if people are willing to be instructed, and those who know at all accurately the leading features of the principal architectural styles will no doubt develop a better taste and perception in regard to good and bad style in architecture than those who have had no such training: but the teaching of separate styles has the radical defect of confirming the public in the idea, which many architects never emerge from, that architecture means the designing of buildings in some special and pre-ordained "style"; an idea which starts the learner at the outset on a wrong track, leading him to put the secondary before the primary element in architecture.

In any attempt at general or primary instruction in architecture, therefore, a certain general instruction in what may be called elements of architectural design should precede the study of special styles. This is not quite so simple a matter as it appears at first sight, because though there are some broad elementary principles which are felt to be true by all real designers in architecture, they are not altogether susceptible of accurate definition; they cannot, for instance, be formulated into a series of necessary and undeniable axioms such as those which precede the problems of Euclid; their nature is æsthetic rather than scientific; and abstract æsthetic principles form a somewhat thin atmosphere for a beginner to inhale. The best basis for a primary instruction in architecture therefore appears to be, to regard the art from the outset as the expression of construction, and to teach the simple and fundamental principles of building construction in the first instance, as the basis of the whole. A study of the details of the leading styles of architecture, always with reference to their constructive basis, will then insensibly develop in the learner, along with the knowledge of the facts of a style, a perception of the manner in which architecture expresses construction, which the pupil may be afterwards able to apply for himself in a broader and more general sense; while the study of the details of the purest styles of the world forms at the same time a valuable training in the sense of architectural refinement and consistency of expression.

Elements of construction, then, followed by elements of leading styles, seems to be the only practical form which a primary instruction in architecture can take: and when and how can this instruction be conveyed? Mr. Aitken's suggestion, in which we in the main concur, is that "architecture should be recognised as one of the indirect branches of study in the tuition of the young." We do not know exactly what he means to imply by the term "indirect," unless it be that architecture should appear as what is called in a school syllabus an "extra." That perhaps may be unavoidable at the outset, and it may be well to get even that in as the thin end of the wedge, but it is rather of the essence of primary instruction that there should be no "extras," and that whatever subjects are desirable for laying the foundation of a good education should be a portion of the fixed routine of teaching. The simple kind of elementary teaching which we have advocated need not, in competent hands, take up any disproportionate amount of time and brain-work. Its adoption would probably, in the course of one generation, work a wonderful change for the better in the general level of architectural taste and perception in this country, besides tending to arouse an interest in the subject for its own sake, and putting an end to that "don't-care" attitude on part of the public towards architecture, which is perhaps the greatest of all obstacles to the general improvement of our standard of national architecture.

Mr. Aitken's paper contains some other excellent and practical suggestions for increasing the interest of the young in architecture, during the further progress of their education. He suggests, for example, that in connexion with the study of history, illustrations of the principal buildings of the cities or countries whose history is being read, should be exhibited to the students, and their origin, uses, materials &c. should be described; we might add, that a word should be given by the teacher, or required from the more advanced classes of students, as to the style of such a building, its position in architectural history, its historical connexion with previous forms of architecture. He suggests that instruction in drawing might be made the opportunity for combining instruction in architecture, by giving the pupil pieces of good architectural detail to copy, with the saving clause (most necessary to bear in mind) that "no copy for imitation should be placed before the pupil which is not in itself a work of art," an injunction which cannot be too often and too strongly insisted on. And, to sum up the beneficial influences brought to bear on the pupil's architectural perceptions, "With all this systematic reference to the art of architecture in the lessons of the school, it is of course taken for granted that buildings in which that instruction is given are models of high quality in art. The school should not only be well planned, but also ably designed." This is a good deal to "take for granted;" but, as the writer of the paper admits, a certain number of well-designed schools have been built under recent influences; and we may add that even where the school building is notably deficient in architectural beauty or good taste, it might be possible still to turn it to a melancholy account in an educational sense, by adducing it as an example of deficiency or absurdity in architectural treatment.

In the first of the two papers we are referring to, by Mr. Douglas, something is said as to the value of books on architecture in promoting a more general knowledge of the subject. We fear this has not been hitherto a very important influence. Books on architecture are seldom read except by those who have already developed some interest in the subject; to the ordinary reader they are not attractive. An exception must be made, of course, in regard to the publications of Ruskin, which have the opposite fate; they have attracted general readers by the eloquence of their style, is much as they repel better informed people by the nonsense and clap-trap they contain. It is to be regretted that they should have been recommended at the Art Congress as a means of architectural education. Ruskin's writings in regard to architecture have had the effect of conveying to the popular mind, to a certain extent, the idea that architecture is a subject worth being enthusiastic about, and that is something; but their merit in this respect is more than counter-balanced by the false teaching they contain. A protest was made at the time against the recommendation of them as aids to architectural education, which may be repeated here. The "Seven Lamps" contains a certain amount of truth about architecture expressed in a vague rhapsodical manner, and intermingled with a great deal of idle though eloquent verbiage written purely for effect. "The Stones of Venice" is simply a huge, elaborate, and tumultuous rhapsody, containing isolated passages of splendid literary eloquence, but worse than useless, absolutely mischievous, as a guide to the study of architecture, being crammed with misrepresentations, false rhetoric, accidentals of architecture treated as essentials, corrupt varieties of style represented as central types &c., and marked by absolute ignorance of the constructive basis of architecture. Its value is purely and entirely literary and poetic, and has been a good deal over-estimated even in that respect. From an educational point of view it is one of the most mischievous and misleading books on architecture ever written.

Tramway Extension at Huddersfield.—On Tuesday last Major-General Hutchinson, C.B., one of the Inspectors from the Board of Trade, paid a visit to Huddersfield to inspect an extension of the tram system from Moldgreen to Waterloo, on the Wakefield-road. The extension is a mile and 26 yards in length, and the line has been constructed under the superintendence of Mr. R. S. Dugdale, C.E., the Borough Surveyor.

PUBLIC WORKS, IRELAND.

ACCORDING to the last report of the Commissioners of Public Works in Ireland, dated July, 1890, the large sum of 424,800*l.* was appropriated to the construction and maintenance of works for the amelioration of the conditions under which people live in that country, during the year ending March 31 last, consisting of the sum of 69,672*l.* for inland navigation, harbours, and labourers' dwellings under the Acts of 1866 and 1885; of 228,853*l.* for works under the Public Health Acts, Asylum Buildings, Labourers' Acts of 1883 and 1885, dispensary houses, &c.; of 90,582*l.* for river drainage and land improvements; and of 35,693*l.* for miscellaneous works. A larger amount was appropriated in the previous year, viz. 564,850*l.*

These annual amounts are loans from the Treasury. The Commissioners of Works in Ireland divide them into four classes—(1) Loans secured on undertakings, (2) Loans secured on rates, (3) Loans secured on lands, and (4) Miscellaneous loans. The advances on the security of the undertakings have been on a very limited scale during the last year, but they include 3,500*l.* to the Lagan Navigation Company, to enable them, in pursuance of the Act of 1888, with the sum of 7,000*l.* contributed from other sources, to restore the works of the Ulster Canal, and give a depth of 5 ft. of water from end to end, a length of forty-eight miles, which will improve the water communication between Belfast and the Lough Erne. The loans for harbour works comprise 18,000*l.* to the Waterford Harbour Commissioners.

Under the Labourers' Dwellings Act of 1866, the powers of which were enlarged by the Housing of the Working Classes Act of 1885 for a period of three years, and further extended for the three years terminating on December 31, 1891, the sum of 46,319*l.* was appropriated during the last year. In the previous year the sum was 53,753*l.* The loans for the purposes above named are secured on the undertakings. Those made during the last year which are secured on rates, were *six* advances for road works, *one* for an industrial-school, *forty-eight* for sanitary purposes, *three* for repairing fishery-piers, *twelve* for improving the accommodation of county lunatic asylums, *two hundred and five* under the Labourers Acts of 1883 and 1885, and *eleven* for building dispensary-houses. The forty-eight loans under the Public Health Act for sanitary purposes amounted to 57,300*l.* In the previous year the amount was 150,384*l.* The 57,300*l.* last year comprised 33,695*l.* for water-works, 8,720*l.* for sewerage, 2,110*l.* for burial-grounds, 4,375*l.* for footpaths, 2,900*l.* for municipal buildings, 4,500*l.* for public parks, and 1,000*l.* for a fever hospital.

In like manner the sum of 89,682*l.*, sanctioned last year under the Labourers' Acts, 1883 and 1885, was very much less than that of either of the two previous years, which was 463,261*l.* in the year ending March 31, 1888, and 188,742*l.* in that ending same date, 1889.

The number of dwellings, upon which the sum of 46,319*l.* was expended, is 603, being an average of 77*l.* each. The Commissioners say:—"To secure that the loans sanctioned shall be applied to the erection of such dwellings as come fairly within the scope of the Acts, and are in every respect suitable to the means and requirements of the labouring classes, it is made a condition with the borrower that the rents to be charged are not to exceed certain specified sums, such rents being fixed on consideration of the locality and the class of labourers for whom accommodation is required. This arrangement has had the effect of limiting the cost of the erection of dwellings built under the loans referred to, and thus securing, as far as practicable, their being permanently available for occupation by the labouring classes."

The sum of 90,582*l.* named as for land improvement, is chiefly for loans to tenants, the owners not now having much interest in the improvements.

Under the head of light railways, the tramways constructed under the authority of the Acts of 1860, 1861, and 1883 are included. The total mileage of projects guaranteed is 307 miles, of which 172 are opened to the public, 61 miles are in course of construction, and 74 are not commenced, although the Orders are still in existence. Under the Light Railways Act of 1889, for the development of fisheries and other industries, sixteen were scheduled in the *Dublin Gazette* in November and December last, but the money voted by Parliament will not be sufficient to construct all the lines scheduled.

NOTES.

A FURTHER contribution* to the literature on "Building in Earthquake Countries" has recently been furnished by Professor John Milne, F.R.S. It contains much useful information on the subject, not only in respect of the construction of earthquake-proof buildings in Japan, with which the author is especially acquainted, but of the building regulations drawn up for Ischia, Manila, Norica, &c., by their respective Governments. Commencing with the methods of choosing a building site, he shows that this may often be determined by taking the results of experience as a guide. Earthquakes are more often noticed on high- than on low-lying ground; but, in spite of this fact, the low, soft ground is in general conducive to greater destruction. As a rule, hard, high ground is the best to build upon; very wet ground, and notably ground that is marshy, is as insecure against earthquakes as in ordinary cases. Earthquake action is extremely local in character. Amongst other things it was found, as the result of experiment at the late Imperial College of Engineering, at Tôkiô, that of two similar houses in the compound of that establishment, which were situated at a distance of less than 800 ft. apart, one of these houses might be destroyed by a given earthquake, and the other suffer little, if any, damage,—so clearly pronounced was the difference in motion on two sides of that piece of ground. There can be no question, therefore, of the utility of a detailed seismic survey of earthquake-stricken countries, and especially in the cities. One of the results of a general seismic survey of Japan shows that certain parts of that country are comparatively free from earth-movements,—a result of no little importance. Houses, naturally, should not be built near the edges of cliffs or scarps. Dealing with the value of the records of the seismograph, Prof. Milne says he is "of opinion that an earthquake with a 25-millimètre (0·984 in.) amplitude and an ordinary period would wreck the half of London." Great advantages might be gained by giving buildings deep foundations. The Ischian regulations state that buildings should be founded on solid ground; where this is impracticable, however, they provide that a platform of masonry or cement should be formed, the thickness of which varies with the height of the structure to be placed upon it. The author says that loose foundations might possibly be employed for small, light buildings erected on soft ground; but for ordinary dwelling-houses, and especially for heavy structures covering a considerable area, solid continuous foundations in the hardest ground, and, if possible, surrounded by a free area, are preferable. Arched construction, not being suitable to withstand horizontal stresses, is to be dispensed with as much as possible. In regard to the regulations made for Ischia and Norica, which state that doors, windows, or other openings should be placed vertically above each other, Professor Milne remarks that, in his opinion, they "ought not to be above each other, but so arranged that lines of openings when regarded vertically should be as much broken as possible." Constructors should avoid coupling together two parts of a building having different vibrational periods, or else couple them together so securely that they shall move *en masse*. Chimneys should be made short and thick, and not loaded with heavy coping stones. Naturally, roofs should be made as light as circumstances permit. When a building with a heavy roof is suddenly moved forward, the roof by its inertia tends to remain at rest, and destruction ensues. A case is cited where roofs of considerable span were built so that they rested freely on the supporting walls, and it is shown that, although having experienced many severe shakings, they remain uninjured. Walls ought to be built light and strong, and not loaded in their upper portions with copings and balustrades; whilst it is not desirable to carry any building higher than is absolutely necessary. The Ischian regulations give a limit of height of 32·8 ft. for ordinary buildings, and those of Liguria allow 49·2 ft. "The length of a wall should not exceed twice its height, unless supported by a buttress; its thickness must be one-fifth of its height." Balconies in any form are objectionable features in a house constructed to withstand earthquakes. It is also suggested that buildings should preferably be rectangular in plan, because when they have many wings, &c., the different parts of the structure do not vibrate in unison. The author then describes the construction of floors, ceilings, staircases, materials, &c., all of which might call for special comment. In dealing with types of construction, he says, "One of two systems. . . . . can be followed, namely, either to give so much rigidity to a structure that it may be likened to a steel box; or to erect a light building which has so much flexibility that it may be compared to a wicker basket." Prof. Milne is certainly to be congratulated on the production of a paper which cannot fail to be exceedingly useful to all architects or engineers practising in, or designing structures for, countries visited by earthquakes. As a matter of practice it might often be found impossible to comply with all the rules laid down, for, if they were observed in their entirety, the earthquake-proof building of the future would not, apparently, possess much artistic charm. At the same time, the suggestions, founded as they are in the majority of instances on actual experience, and as a result of much painstaking observation, should certainly be borne in mind and applied wherever practicable.

* Min. Proc. Inst. C.E. vol. C (1890), "Selected Papers," p. 326 *et seq.*

IT is certain that one result of the present epidemic of strikes will be a great increase in labour-saving machinery and in machinery to economise working. There is an untold amount of mechanical ingenuity eagerly seeking after new inventions, and this stream of talent will be now diverted more especially towards discovering inventions by which the extra cost of labour will be minimised. We should be the first to welcome combination for purely legitimate purposes, but where it is used rather for the purpose of crushing capital and making labour supreme, we equally welcome any means which will enable capital to hold its own. The great mistake which the trade union leaders make is to suppose that either unreasonably high wages or arbitrarily shortening the hours of labour will, in the long run, permanently benefit the labouring classes. For example, if the price of coal is raised, then at once means are sought to economise its consumption, whereby the extra cost per ton shall be met by smaller quantities being consumed. When such a general economising becomes established, it is obvious that less coal is required, and that the volume of wages paid to coal-miners is diminished. Hence either wages must fall, or a certain number of men must drop out of that particular class of workers. In either view, the ultimate result of the rise is not more favourable to the workmen. But care must be taken not to

suppose that such effects will result in a moment. As an example of coal-saving which recently came to our knowledge, we may mention the case of a tannery. In order to save the ever-increasing coal-bill, a furnace was devised in which the many tons of tan which had hitherto been practically wasted are now consumed, whereby a great saving in coal is effected. This is typical of what is going on slowly all over England. Mechanical teaching and thought has now brought modern brains to such perfection in this particular intellectual groove that there is hardly any limit to the increase of labour-saving appliances.

THE quinquennial valuation of London is naturally causing much dissatisfaction. The present revaluation was certain to do this. In most parts of the West End of London house property has fallen in value. The Assessment Committees have, however, very generally raised the rateable value of houses. In many cases it is probable that houses have been assessed below their value before, but the householder, when his property is less valuable than it was, is no better pleased at a higher valuation because the valuation was rather below the mark before. In many cases, however, the Assessment Committees have probably trusted to the general disinclination of the average householder to do more than grumble, and have screwed up the valuation beyond what the fall in value of property in West London would warrant. It seems very likely that many appeals will ensue, and we should not be surprised were considerable restrictions made in many valuations. While touching on the point of rates, it may be well to call attention to the ridiculous anachronism which exists under which notices as to valuations, rates, serving on juries, and so forth, are posted on church and chapel doors as the chief place of exhibition. There is no reason why they should not be exhibited there, in case they attract attention, but they should in villages be also placed on the village school, and, primarily, both in towns and villages, on public notice-boards erected for the purpose. Many churchyard gates are locked on week days, and over and over again valuations are raised and not objected to because they have not been seen, and so the time for objecting has lapsed. In France the public notice-board is seen in every village guarded by a wire screen. This is the proper system.

ON Sunday next, Sept. 28, the Turin Architectural Exhibition will be opened to the public. We have reason to believe that this exhibition will be a success, thanks, firstly, to the arduous work of the president of the committee in charge, and secondly, to the valuable assistance rendered by the Italian Government. According to the *Secolo*, of Milan, most of the foreign municipal authorities invited to exhibit have accepted the offer; so that, besides the numerous Italian towns represented (among which we may especially mention Rome, Naples, Milan, and Florence), quite an international collection of examples of municipal work will be on view; capitals such as Vienna, Berlin, Constantinople, Warsaw, Stockholm, Edinburgh, and London taking prominent positions among a host of provincial cities. As to Italy itself, we need only say that a complete collection of plans of the historical buildings of the country will be hung in the central hall of the exhibition buildings, where they have been arranged by order of the Ministry; and that Section IV. shows the plans of the underground ways of the more important towns. Of special interest will be the large number of specimen copies of publications, photographs, and photo-lithographs sent in from all parts of the world. The Minister of Education, Sig. Roselli, will open the exhibition in person.

IN Italy architectural gatherings, not unlike the biennial congresses held in Germany, have been known for many years, and we hear that at the last one, held in Venice in 1887, Palermo was selected as a meeting-place for the congress which is to take place in the autumn of 1891. Owing to Palermo having the special attraction of an Italian National Exhibition on a large scale, it was decided to make the coming gathering an "international" one. The International "Congress" of Architects, as it is to be called, is intended as a serious business-like affair, combined, however, with some interesting sight-seeing and official banquets. The congress, which, according to the preliminary "programme," is to last not longer than twelve and not less than eight days, will have its seat in the university buildings of the town, and here the different sections (Architecture proper, Construction pertaining to military, factory, and Civil buildings, Sanitary Engineering, and Civil Engineering) will each have their own series of lectures, debates, &c., the subjects of which, still under consideration, are not only to include theoretical, but also practical items, special explanations (in some cases by the designers personally) being given of the larger monumental erections of the last decade. As to the sight-seeing part of the programme, systematic excursions, under able guidance, will be made inland, and great care will be taken that the visitors shall have easy access not only to the archæological but to the natural points of interest on the island. Particulars will be published at a later date. The Duca di Verdura has accepted the hon. presidency of the local managing committee.

THE great and picturesque building which has given the name of Christ-Church to a small hamlet in Hampshire has long been in a serious and even dangerous state of decay in many places, and, as we noted recently, is being slowly repaired by little and little as funds can be procured, under the direction of a Bournemouth architect, Mr. Burton, with the concurrent advice of the vicar, Mr. Bush, who is very well acquainted with his church. Few people are probably aware of the great difficulty in the way of carrying out even the degree of repair necessary for the security of the edifice and its fitness for public worship. An edifice on the scale of a second-class cathedral, Christ-Church is worse off than many a small parish church, its permanent endowment representing in fact a *minus* quantity after the first ordinary expenses of carrying on the regular services have been discharged. A local committee has done all it can for a long time towards collecting funds and contributing out of the private means of its richer members, one or two individual members having undertaken each the cost of repairing the most dilapidated piers and giving them the solid concrete foundation necessary for their permanent security. The decayed roof over the north transept and that over the Lady chapel "loft" (the low compartment above the vault) have been replaced by substantial new oak roofs, and the roof of the choir releaded. The most pressing matter now is the nave roof. This was originally an elaborately-decorated open-timber roof, now concealed by the timber and plaster imitation vaulting put up in the early part of the century. The ancient roof principals are in a dangerous state of decay, and are being rendered safe for the time by the insertion of new collars strutted up from a point on the walls below the bearing of the old roof, and by strutting up again from these to the bearing of the purlins. Only a portion of this work, however, is yet done, and any hope of obtaining the funds for reconstructing the roof entirely and removing the timber vaulting seems adjourned *sine die*. The sham vaulting makes a dangerous mass of inflammable timber cradling, and the view between this and roof shows a state of things which ought to be put an end to as soon as possible. There is no desire for "restoration" as such, except for the reconstruction of work that is decayed beyond the possibility of being permanently retained. We recommend the matter to the interest of any wealthy readers who can afford to contribute something substantial to arrest the threatened decay of a great and most interesting mediæval church.

IN connexion with the operations in constructing the Chambers Memorial Chapel in St. Giles' Cathedral, Edinburgh, the remains of a fine window in the Perpendicular style have been laid bare. The window is in the east wall of the north transept, and overlooks the small gallery above the north doorway. It is to be carefully restored, and will be retained in its position between the Memorial Chapel and the gallery. The jambs of the window have the large shallow mouldings of the style, with moulded bases and carved capitals. There is an elaborate battlemented transom which remains in a remarkably good state of preservation. Above the window, parts of the original corbelling supporting the roof parapet have been found, as also a lion's head and rosette, which are to be preserved and built into the responds of the arch between the Cathedral and the Memorial Chapel. From an archæological point of view, one of the most interesting discoveries is a Norman capital, which is the oldest piece of masonry yet found in the Cathedral.

A SHORT report on an outbreak of fever at Northop Hall, in the Holywell Rural Sanitary District, has been made to the Local Government Board by Mr. Spear. Northop Hall consists of three or four rows of cottages situated at wide intervals by the roadside, and is described by the Medical Officer of Health and Inspector of Nuisances as one of the most troublesome places in the neighbourhood in regard to the maintenance of cleanliness. The report, however, proceeds :—

> "The inhabitants have, in fact, little opportunity of acquiring habits of decency and cleanliness. There are no proper means of drainage. Liquid sewage is allowed to flow for the most part into the roadside gutters, or collects in pools outside the dwellings; solid filth is deposited in dilapidated and foul privy-pits, which are rarely emptied, and the oozings from which are occasionally to be seen even on the surface. Water has often to be fetched by hand *from quite unreasonable distances*, and is only then procurable from dip-wells or roadside troughs, doubtless more or less liable to surface contamination."

The fact that water is only to be procured "from quite unreasonable distances" is a frequently recurring cause of evil mentioned in the Local Government Board reports. Unless people have a supply of good water brought within easy reach of them, it is idle to expect cleanliness. The result in this case was typhoid fever.

A CORRESPONDENT sends us an advertisement of the Awre Local Board for a "competent person" for the office of Working Surveyor and Inspector of Nuisances. We read that "the salary as Inspector of Nuisances will be 17*l.* per annum, and as Surveyor 16*s.* per week. The person appointed will be required to labour manually, devoting his whole time to the duties of the offices, which will be those prescribed by the Public Health Acts, the Highway Act, 1835, the Regulations of the Local Government Board, and the by-laws now or hereafter to be in force, and adopted by the Local Board. The population of the district of the Board is 1,179, the acreage 4,093, and the mileage of the roads over which the surveyor will have control is 10½." It is not surprising, when this is the way that such work is provided for, to read such frequent complaints as we do in the Local Government Board Reports as to the inefficient way in which sanitary inspection is carried on in many rural districts.

THE 1st of October will be memorable in railway history, for on that date the hitherto exclusive "Flying Dutchman" will succumb to the levelling influence of the bold policy initiated some eighteen years ago by the Midland Railway Company, and will be available for third-class passengers. The Great

Western management have had to break with the traditions of nearly half a century in thus catering for all sorts and conditions of men, and in taking this action they have no doubt been stimulated by the recent efforts on the part of the London and South-Western to improve their service to Exeter. The fact of the announcement being made a week or two beforehand furnished the *Times* with a text upon which to enlarge upon the unreasonableness of the delays which usually occur in letting the travelling public know of impending changes. A remark to the effect that railway authorities seem to take a delight in stealing a march upon the public by delaying the publication of their time-tables till the last moment brought Mr. Cook, of tourist fame, to the rescue, with an explanation. According to Mr. Cook, their real object is to steal a march upon their competitors, — a railway manager being bound, in the interests of his company, to keep competitive managers in the dark as long as possible when bringing out a fast or improved service. Certainly, this explanation appears a perfectly reasonable one, though it will hardly reconcile the aggrieved section of the travelling public to the late appearance of the time-tables. The shortcomings of railway companies is a proverbially favourite theme of correspondents to the *Times*, and these gentlemen have had a good innings lately, all the old grievances being well ventilated. A writer in last Tuesday's issue pertinently remarks:—"If it is a fraud for me, holding a third-class ticket, to travel in a first-class carriage for my convenience, it is equally a fraud on the part of the company to take my first-class fare and give me third-class companions." This is logical enough, and there is no doubt that the latter fraud is perpetrated systematically on many lines when there is anything like a crush.

A PAPER by Mr. G. N. Hooper, read before the Society of Arts, on "Carriage-building in England and France, and the Traffic of the Streets," has been reprinted. It gives a number of interesting details in regard to the progress of carriage-building, and the comparison between French and English work is especially valuable. Some of the remarks in connexion with the streets of London are, however, of more interest to our readers. It is curious to observe how one system sooner or later affects another. Thus the introduction of wood and asphalte pavement has produced the india-rubber tyre to the wheel,—a method which Mr. Hooper considers likely to increase. Again, too, it is important to bear in mind that bad roads mean extra wear and tear of vehicles, and thus when the householder grows too economical in regard to the taxes which are to be spent on roads and streets, he should remember that it is only by having good streets that street-locomotion can be made cheap. Low fares and great wear and tear of vehicles are incompatible. On another point we thoroughly agree with Mr. Hooper,—that there is unnecessary wear of the London streets by market traffic. Much vegetable and other material is carried to Covent Garden and Smithfield, only to be brought back to the suburbs. Several district markets are needed in London.

PROFESSOR ROGER SMITH announces as the subject of the usual public lecture with which he opens his courses at University College, "The Technical Education of Architects." The lecture is fixed for Thursday evening next, October 2, at 7.30 p.m. We understand that in the course of the lecture some remarks on the "Curriculum" now under consideration at the Architectural Association will be made.

A FIRM of tile manufacturers, whom we will not further advertise, are circulating a pattern-sheet of their tiles among architects, with the memorandum scrawled in blue pencil across it—"Fifteen per cent. commission allowed to architects only." As these manufacturers are evidently very desirous to get their goods under the favourable notice of architects, they ought to be obliged to us for telling them that they have taken the wrong means of doing this by circulating among the profession an offer which the respectable members of it regard as a most improper one. We received on the same day several letters from architects enclosing this circular and requesting us to comment on it. The manufacturers who have sent it had better withdraw and apologise for their offer of a bribe to architects to use their tiles.

WE have received in a pamphlet form an illustration and description of the terra-cotta bas-relief placed over Mr. Heath's hat shop in Oxford-street. We have before noticed with commendation this work, which is no doubt a form of advertisement, but a form so far superior to most of those employed in the present day that we cannot but hope that it may constitute an example to be followed in other instances. The frieze is modelled by Mr. Benjamin Creswick, of Sutton Coldfield, and commences with a figure of St. Clement, who is said to be the patron saint of hatters. Other panels represent the granting of a Royal Charter by King James to the hat-making industry; the unloading of fur-wool from a ship; the old process of beaver and felt hat-making. After these follows the name of the firm, and the corresponding right-hand portion of the frieze is occupied by representations of the modern processes of hat-making. The groups are spirited in modelling; we do not know that we should have liked the realistic treatment employed had the work been life-size; but on the small scale adopted this passes off better in sculpture than on a life-size scale; and the whole thing is a credit to the tradesman who wished to illustrate his business in an artistic manner, and to the artist who carried out the idea.

IN reference to the view of the interior of Lower Brixham Church, as proposed to be rebuilt and enlarged, which was published in the last number of the *Builder*, the vicar (the Rev. Stewart Sim) writes that the rebuilding of the church was first undertaken as a memorial to the Rev. H. F. Lyte, the author of "Abide with Me," and of other hymns well-known in English churches. Mr. Lyte was the first incumbent of Lower Brixham, and was there for twenty-five years. The parish, the population of which consists almost entirely of fishermen, is a very poor one, and it is exceedingly difficult to collect funds for the completion of the church. The vicar hopes that some of the many thousands to whom Mr. Lyte's hymns have become almost as household words may be willing to contribute something towards the completion of the church in his former parish.

EXCAVATIONS AT TEL-EL-HESY.

WE have become accustomed as each autumn comes round to look, as to a fixed institution, for an exhibition of ancient relics gathered by Mr. Flinders Petrie in the East. These present to us year after year something eminently worthy of study, and always different. We are sure to find something not hitherto known which indicates how far back must be placed the matured works of human skill and industry. One year we have the results of unearthing an unknown town; another year, a cemetery containing painted portraits of the people interred; another, the discovery of an important Biblical site. These researches, carried on by a single enthusiastic man, are worked out with all the acumen that facile knowledge and love for the work can prompt, while the happy choice of sites to be operated upon is made in a spirit but little short of inspiration.

This year's exhibition, which will continue open at the Oxford Mansion, Oxford-circus, until October 11, is in no way of less interest than any of the previous displays. In some respects it exceeds them, for light at last has been thrown, by Mr. Petrie's excavations, upon the remote past history of one of the cities of Judea. The collection fills three rooms, the two principal ones containing Egyptian works of great interest, to which we propose again to refer. The third room, of small dimensions, is filled with objects of a very varying class, the greatest bulk of them totally different from the Egyptian articles. They are the first relics that have been brought to light of the early inhabitants of Judea, and, although at first sight their aspect does not arrest attention, yet their importance is only equalled by that of the momentous events of which these feeble articles are mute but eloquent evidences.

It is many years since travellers in the border-land country of Palestine have reported the existence of many artificial-looking mounds, called "tels" by the Arab tribes inhabiting the country, and these have long been supposed with justice to represent the sites of fortresses or habitations of by-gone times. Strange to say, no systematic attempt has hitherto been made to investigate any one of these mounds, although the usual system of erection practised in the East is very encouraging to the explorer—for he knows that the Arab builder, at least of to-day, seldom or never clears away the remains of the structure which he would rebuild. He constructs his new work upon the old. The site of a town or village thus in time rises above the original level; and the explorer has the happy supposition, to encourage his work of research, that what is being done now, has most probably been done for generations upon almost every Eastern site. He will find old, and still older relics, buried beneath each stratum that he may be able to dig through.

Mr. Flinders Petrie has the credit of being the first systematic explorer of the first of these mounds of Judea, and, although the means placed at his disposal were very limited, both as regards time and expenditure, yet, coupled as these works have been by his usual happy choice of position, the results obtained, shown in the little room by permission of the Palestine Exploration Fund, are extremely encouraging.

One of the principal of the "tels" which dot the plains of Judea is that of Tel-el-Hesy. It is a conspicuous object in the open, rolling country, standing as it does on a range of the low-lying hills of the fertile district, now almost without any settled village, but which at some period must have been very populous. This is sufficiently attested by the existence of the mounds already referred to, and by other sites where ruins (Khŭrâbeh) still exist. The Arabs, to this day, place this word as a prefix to the names of the sites, and they are extremely numerous. Khŭrbet Tannar, Khŭrbet Hazzârah, and Khŭrbet el Wahashîyeh, are all within sight: while Khŭrbet 'Ajlan, a large site, is only a mile and three-quarters away from it. The whole of these four places can be visited by a walk of less than three miles from Tel-el-Hesy to Kh. 'Ajlân. Others, apparently sites of importance, are within easy distance, of which Tel-en-Nejileh must be mentioned, since it is a large mound, the site of a place of consequence, and but three miles and a half away to the south-east. No roads exist, but many trackways meet close to Tel-el-Hesy, and some of these doubtless mark the courses of ancient roadways. A fine Roman road has led northwards through Judea, and is still traceable, the nearest point to our Tel being at Beit Jibain (the ancient Eleutheropolis), which is about eleven miles distant as the crow flies. Two roads branch off westwards in the direction of the Tel, but come to an end four or five miles from it, and are only continued as trackways. One of these, at any rate, if not both, the road two miles to the south of Beit Jibain, is likely to be of Roman construction, since it branches off in a curved line, which appears to be part of the course of the main Roman trunk road from which it separates.

The questions naturally arise, What was the ancient name of the Tel, and if so, has the site played any part in ancient history? There have been many conjectures, but that which may best commend itself to us is briefly stated in the "Survey of Western Palestine," the well-known series of volumes which contain the admirable and painstaking labours of the Palestine Exploration Fund. "The name approaches that of Lachish, with the substitution of a guttral for the Hebrew Caf, as in the case of Michmash." The position, too, at the entering in of Judea would also agree well with the locality in which we might expect to find it.

Lachish fell before the children of Israel, and

by Divine decree it was utterly destroyed B.C. 1451. Rehoboam, however, fortified it in as one of his cities of Defence, circa 975 B.C., and it was to Lachish that King Amaziah fled, and where he was killed, circa 825 B.C. It was here that Sennacherib stayed, after its capture, when he received messengers from King Hezekiah at Jerusalem in 713 B.C. This is, in brief, the history recorded in the Old Testament. There is no mention of the site in later times, and we are at a loss to know from recorded history whether or not it continued to exist as a town after the time of the captivity.

The mound, which is 340 ft. above the level of the Mediterranean, measures about 200 ft. square, with a flat plateau on its summit, and it rises to a height of 120 ft. in its highest part above the level of a small stream, which runs along the south and east sides, and which in course of ages has completely undermined and laid bare the whole of the eastern side from base to summit.

Mr. Petrie commenced his researches on a site not far distant, known as Umm el Lagis, which was supposed to contain the elements of the name Lachish, where he soon became aware that but little results would be obtained. Wishing to husband the resources at his command, he turned his attention to Tel-el-Hesy, where he at once happily turned to good account the overthrow of the side of the hill by the action of the stream. It gave him, in fact, a complete section of the mound without the labour of excavating it. Huge fragments of walls were seen projecting from its sides, although, being constructed entirely of sun-dried bricks, and covered with the deposits of similar material washed down the sides of the hill by the rains and storms of generations, it required a critical eye to trace which of the clay masses were constructional, and which was merely deposited, a task rendered all the more difficult by the decay of the facework. Finally, it was discovered that on a natural plateau, about 45 ft. above the existing level of the stream, existed a massive wall still more than 20 ft. high and about 30 ft. thick. This was traced for a considerable distance, and it is assumed, naturally enough, to be the earliest wall of enclosure. Above this wall is a second one, also built of sun-dried bricks and of somewhat less size, still about 10 ft. high. Remarkable to say, above this again, still slightly within the area, thus circumscribing the space enclosed, is a third thick wall.

These indications appear on the whole of the north side. But their continuity is attested by a few other evidences, on the south. But the topmost wall was traced along the remaining three sides and found to be of irregular figure, terminating in what was probably a tower at the north-west, with an entrance at the south-west, approached by a flight of steps arranged up the slope of the mound, enclosed by a curtain wall built along the slope, the base of which consists of masonry; the stones being worked with a draft around each, the central portions of the face being rough,—merely hammer-dressed, to use our modern term.

The irregular course of the upper wall was made out by Mr. Petrie under no small difficulties, for the crop covered it when it was first known to exist. Fortunately, the harvest was at hand, and as this was gathered trial holes were made from point to point rapidly, as soon as the ground was cleared by the reapers, the angles calculated, and the course of the wall determined.

The interior of the mound proves to consist of the remains of town upon town. Of these the lowest ranges with the top of the lowest wall. Above this there is indication of the partial use of the site by some nomadic population, too ignorant to construct buildings systematically, for there is evidence that their houses were built of small stones gathered from the brook, and they now lie in a well-defined section across the mound. Then must have followed a time of entire abandonment of the site. This is proved in a curious manner. A layer of bush ashes is found covering it. These lay in some places thick enough to be measured, in others they show themselves only by a mere thin line, just as they were blown about hither and thither by the passing breeze. They are the ashes of shrub and plant burning for the extraction of the alkali, just as is practised by the Bedouin at the present day.

But a period of revival took place. This is attested by the existence of a rectangular building, which probably belongs to the period of the second wall, although it stands above it in level. Its walls are still about 8 ft. high, completely buried in the accumulated earth of the Tel. But this building itself bears evidences of reconstruction. Old material is found in it re-used. There is a curious scratched figure of an animal on a small slab of limestone. It has been taken from elsewhere, and is turned upside down. Several doorways have been traced, and several of the jambs of these are formed of limestone slabs, on which are worked curious spiral twists, one of which is sketched.

These form the right-hand sides of the jambs, and mark the thickness of the walls. The left-hand sides are plain, having been covered presumably by the doors themselves when opened against them. Immediately above these ruined walls are others of a larger and more important building, which belong probably to the period of the third wall. They are still about 14 ft. in height, and are, like the others, constructed of sun-dried bricks, and are adorned with a series of projecting pilasters at irregular intervals, but some of these are probably return walls. From the topmost level, doubtless, to that of the stream exists a well for the use of the garrison. It is placed in the tower-like building.

Such, in brief, are the results of the excavations, and for the first time we know the formation of the mound; and if this example may be taken as a specimen of others, as is probably the case, we are in possession of interesting information likely to be of more general application.

But valuable data are at hand to determine with a certain amount of exactitude the actual periods when the mound was peopled. This is by comparison of the pottery found at various levels, the precaution having been taken to mark all the specimens as they were met with. They are found to vary in style and in texture in the various strata dug through.

At the lowest level the pottery was blackish-brown in colour, fairly smooth and thin in texture, tooled over in some cases before firing to bring the surface to more even surface. It has not hitherto been observed, or certainly not in relation to what was found above it. We illustrate two examples. In no case was this found higher than the level of the first wall. This is succeeded by an entirely different class, but well known to observers as being of Phœnician manufacture.

We give several examples. Similar pottery has been found at Rhodes, by Major di Cesnola in Cyprus, by Mr. Petrie in several sites in Egypt, and, in fact, more or less in every ancient site along the Mediterranean. Its existence in so many places attests the commercial enter-

Sketches of Pottery and other objects from Mr. Flinders Petrie's Exhibition.

Sketches of Pottery and other objects from Mr. Flinders Petrie's Exhibition.

prise of the remarkable but little known people who produced it. The lowest example found in the mound was at a level of 305 ft. above the Mediterranean, the highest 325 ft., extending thus above the level of the third wall. The date of this pottery can be ascertained with fair certainty from Mr. Petrie's former Egyptian discoveries, where it is known by other articles, the dates of which have been ascertained by their hieroglyphics, &c., not to be older than about 1,000 B.C. This is important in relation to the history of the mound, since it gives the age of its central portion, leaving us readily to conclude that the articles found at the lower level are earlier, and the upper ones later. The upper ones consist of a different class so far as regards texture of material, and to some extent of form, although there is a certain resemblance, as if the forms of the older pottery had been copied by later manufacturers, the workmanship not being so accurate. We illustrate several examples of this fictile ware which are new to observers, and, like the older class, its period seems to be incontestably proved by its position. It may readily be considered as of later date than the Phœnician examples found beneath it.

We have thus, in this interesting mound, distinct traces of at least three active periods of building work, and regarding these in the light of the recorded history there is remarkable agreement. We may assign the lowest wall and its pottery to the time of the Amorites, whose cities, we know, were "great, fenced up to heaven." The period of decay, after the destruction of the city, or of use only by roving herdsmen, is eloquently pointed to by the traces of their bush burnings. The second wall appears to be that erected by Rehoboam, during which time, and later, the Phœnician pottery was used, followed by a re-erection of the walls and the use of the third class of pottery up to a later Jewish time. The upper walls may be, therefore, and most probably are, those of the fortress taken by Sennacherib. Traces of reconstruction and repair are observable in all the walls. A few fragments of painted Greek pottery, about 500 to 330 B.C., and some of Roman times, indicate that the site continued to be occupied until after the Christian era, probably to no great extent.

Be this the site of Lachish or not, it must be borne in mind that what occurred to the former city, ensued equally to at least the most important of its neighbours. All were alike taken by the children of Israel. Rehoboam constructed several strong places in its immediate vicinity, and Sennacherib would doubtless have overcome all the places of strength in the locality of Lachish.

The consideration of these momentous events, connected so intimately as they are with the land and the history of the Chosen People, points in a very practical manner to what should be done further to elucidate them. If a few excavations, skilfully performed, but which have not caused a very great amount of the site to be turned over, have produced such interesting results, what may not be expected from more extensive ones? Surely these discoveries point to what should be the future of Palestine exploration. The pick and the spade will bring to light what is safely hidden until the time comes. Almost every ancient site, it may be presumed, contains town upon town, one built above the other, with all the varying works of each period still remaining. We have already referred to the Eastern practice, and this, in the light of what has been proved at Tel-el-Hesy, should be sufficient to stimulate many an explorer to enter upon this new field of enterprise. The Society which encouraged Mr. Petrie to enter upon his work has many a claim by its years of good service already accomplished, and it may be congratulated upon at last entering upon a new departure. We urge it strongly to continue this work, which has been too long delayed, and to consider that the exploration of the future must be that which the excavator alone can accomplish.

There is a rich harvest to be reaped in these buried mounds, untold as they are in number, throughout the length and breadth of the Holy Land, and the public will wait with impatience for further indications of the treasures of the past which they contain.

The map which the Palestine Exploration Fund has published is an important addition to human knowledge, since by its aid we can see at a glance the surroundings of every site. But it only raises our anxiety to know the histories of the many important and unknown sites which are shown upon its sheets in such remarkable profusion.

MOULDING AND PLANING MACHINE.—Messrs. J. Sagar & Co., of Halifax, have just brought out a new pattern moulding and planing machine, which should prove useful to those who require a single machine for general purposes. The machine, in addition to moulding and planing, can be used for tonguesing and grooving, both in hard wood and soft. It will cut on all four sides of the work at one time, having top and bottom and also side cutter blocks; the latter being after the top cutter. The bottom rollers adjust vertically, and the bottom cutter block works in a carriage, so that the cutters may be easily withdrawn for sharpening. The table in front of the bottom cutters will adjust vertically to vary the thickness of cut, the space being opened and closed as required. The frame is composed of a single casting, and phosphor bronze is used for bearings.

View in the Patio Alberca of the Alhambra, Granada: looking towards the Sala de la Barca and the Hall of the Ambassadors.

THE ALHAMBRA, GRANADA.

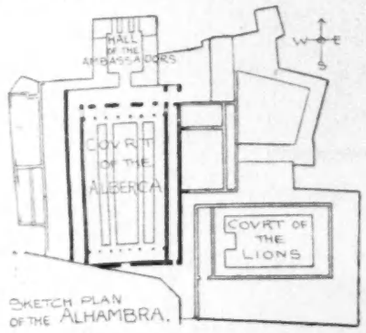
LAST week we gave a short notice concerning the recent unfortunate fire at the Alhambra. To-day we supplement it with a sketch of the interior of the Court of the Alberca, otherwise called the Court of the Myrtles, looking towards the Hall of the Ambassadors, which is under the Tower (Torre de Comares), which rises in the background. The view is taken from the south end of the Court, and shows the colonnade and entrance to the Sala de la Barca, which is a long, narrow hall about 70 ft. by 15 ft., and occupies the space between the two small pavilion towers (see sketch). The Torre de Comares rises immediately behind and contains the Hall of the Ambassadors, 37 ft. square and 75 ft. high, so that the Sala de la Barca really forms an ante-hall to the great hall beyond. The pillars and capitals of the colonnade are of white transparent marble, the upper portion being of very fine stucco work with a surface like ivory. The general tone is a pinky-cream colour. The original colours are only to be found in parts protected from the weather and high up on the ceilings of the halls. Unfortunately the roof of the Sala de la Barca was one of the best-preserved examples of this kind of work, and was in the shape of a boat turned upside down, hence the name Barca (boat).

The courtyard is paved with white marble and the halls with Moorish tiles. The famous Court of the Lions is situated to the right of the sketch. (See sketch-plan on opposite page). We give a detail of one of the columns from the Alberca Court, and also a small sketch-plan, in which the portions burnt are shown black.

The following extract from a letter written on the 18th inst. by Mr. Henry Stanier, the British Vice-Consul at Granada, which appeared in the *Times* of the 23rd inst., may be taken as giving an authentic account of the extent of the damage done:—

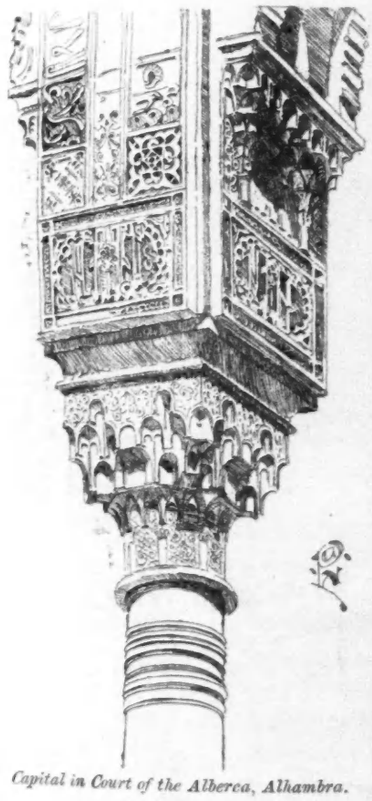
"It appears that the fire was discovered about half-past 10 o'clock on the night of Monday, the

15th inst., but, being asleep in bed, I did not hear the alarm of fire until nearly twelve o'clock. When I entered the palace the fire was raging furiously, and it seemed the whole of the palace was doomed. It appeared to be on fire in three distinct places, which made one feel certain that



SKETCH PLAN OF THE ALHAMBRA.

some criminal hand had been the cause of it. By some judicious cutting in the roofs the fire was prevented from extending to the Court of Lions and the Hall of Ambassadors, and was confined to the Court of the Alberca, and this court, having a large tank of water in the centre, enabled



Capital in Court of the Alberca, Alhambra.

the fire-engine to have an abundant supply, and everybody who could helped with a will, and by two o'clock the fire was localised to the Court of the Alberca and the Sala de la Barca. The roof of this hall has been entirely burnt, but its walls are intact, although calcined, and the beautiful colouring disfigured. The gallery at one end of the Court of the Alberca has also had its roof entirely destroyed. This and some rooms extending all on one side of this court form the total of the parts burnt. The Court of the Lions and all the other courts and halls are intact, and have not suffered in the slightest degree. The opinion is that the fire was intentional, but nothing has been found out, and all is a mystery. Inquiries are being made, but I expect it will never be discovered who did it. It is a miracle how anything has escaped, for the fire was most intense, but the immense thickness of the walls of the Tower of Comares prevented the fire extending to the Hall of Ambassadors, and the cutting away of the roof prevented its extending to the Court of Lions. When I left at four o'clock the fire was almost out, merely smouldering a little here and there. I, as well as many others, helped by carrying buckets of water and doing all we could to assist in keeping down the fire. Nothing was heard but lamentations and imprecations on the dastardly villain who had been its cause. Granada and the entire world have to be thankful that one of the most beautiful and wondrous works of art ever made by man is still in existence, and what has been burnt can all be restored, except the ceiling of the Sala de la Barca and the beautiful colouring on its walls. Men are at work now, day and night, clearing away the rubbish, and the damage will soon be put to rights."

ARCHITECTURAL ASSOCIATION VACATION VISITS:

HAM HOUSE.

THE seventh and last vacation visit of the year took place on Saturday last, when a large party of members of the Architectural Association visited this extremely interesting seventeenth-century house. By the kindness of Lord Dysart and Lady Huntingtower, who met the party, the visitors were shown over the whole of the house, without restriction, and thus enjoying to the full the many treasures to be found, they felt, one and all, that the last vacation visit was most certainly the best of the year.

Ham House was erected, in 1610, by Sir Thomas Vavasor, and from the fact that he was Marshal of the Household to James I. has probably arisen the tradition recorded by Lysons and Neale that it was intended for the residence of Henry, Prince of Wales; a tradition, however, which appears to lack sufficient foundation, as the Prince does not seem to have resided there, and Sir Thomas certainly did so until he transferred the property to John Ramsay, Earl of Holdernesse, by whom, or by his heirs, it was sold to William Murray, who was created first Earl of Dysart by Charles I. The first Earl left five daughters but no male issue, and the property thus by marriage came into the possession of the Tollemaches, William Murray's eldest daughter having married Sir Lionel Tollemache, from whom the present Earl and possessor is descended.

Ham House is delightfully situated near the banks of the Thames, and is especially noted for its fine avennes of elms, one of which, Ham Walk, presented itself to the view of some of the visitors, who, however, were unable to pass along it to the house, as the gates have been closed for centuries, and they were, therefore, obliged to take a more circuitous route, after admiring the wrought iron work, erected in the reign of Charles II., by the Duke of Lauderdale, whose arms: quarterly, first and fourth, a fret for *Tollemache*, second and third, an imperial crown between three mullets, within a double tressure, flory counter flory for *Murray*, surmount the gates.

The house was considerably enlarged in the time of Charles II., the garden front having been then erected by the Duke of Lauderdale, by whom the house was sumptuously furnished, and in whose time Ham was the centre of political activity, the notorious Cabal Ministry in particular meeting there in what is still known as the Cabal room.

Ham House is rich not only in Carolean furniture but also in remarkably fine examples of the work of Vandyck, Sir Peter Lely, Sir Godfrey Kneller, and Sir Joshua Reynolds, among which may be especially mentioned the portraits of James Stuart, Duke of Richmond and Lennox, by Vandyck, of Lady Huntingtower, by Sir Godfrey Kneller, of Charlotte, Countess of Lionel, Fourth Earl of Dysart, by Sir Joshua Reynolds, and of Jane Savage, the first wife of the fifth Marquis of Winchester, who so gallantly defended Basing House against the Parliament on behalf of Charles I. Milton composed the epitaph of the Marchioness, which runs thus:—

> "This rich marble doth enter
> The honour'd Wife of Winchester;
> * * * * *
> Summers three times eight save one
> She had told; alas! too soon,
> After so short time of health,
> To house with darkness, and with death:
> Yet had the number of her days
> Been as complete as was her praise,
> Nature and Fate had had no strife
> In giving limit to her life."

Other famous and remarkable pictures are found in the great gallery, 92 ft. long, amongst them the portrait of Sir Lionel Tollemache, second Earl of Dysart, by Vandyck, and a portrait of Charles II., specially painted for the Earl of Dysart by Sir Peter Lely.

In addition to the pictures and furniture are some good specimens of tapestry, some of which were possibly worked at Mortlake, where Sir Francis Crane established a factory. That in the Cabal Chamber, designed by Watteau, well illustrates the feature of fashionable life known as a *fête champêtre*. The elaborate inlaid floor, with the cypher of the Countess Elizabeth, is also worthy of notice in this and the adjoining room.

The restoration of the silk hangings in the miniature-room deprived the visitors of the pleasure of seeing the famous collection which has its place on the walls of this apartment, but the elaborate ceiling and cove, painted—as were several others in the house—by Verrio, were fortunately in evidence.

Other features of the house that should be remembered were the central hall, with its open gallery on the first floor; and the remarkably handsome principal staircase, carved in walnut wood to represent warlike trophies.

An especial favour was granted to the visitors by the opportunity of inspecting the famous library, so rich in priceless Caxtons and Court Rolls of the seventeenth century.

Mention should be made of the decoration of the river front, the older portion of the house, by the curious series of busts, cast in lead, although painted stone colour, and ensconced in niches on the wall face.

After revelling among the numerous relics of the historic past, an equally vivid though entirely different interest was experienced by the inspection of the laundry, the first example, we believe, of electrically-driven machinery applied to this purpose in England. The engine and dynamo, supplying the motive-power for this establishment, also furnish the electric lighting for the house.

A glance at the stables and cow-houses completed a most pleasant and enjoyable afternoon in one of the most famous and interesting old mansions in the neighbourhood of London.

Illustrations.

ARMAGH CATHEDRAL.

THE drawing shows the re-arrangement and refitting of the choir with new stallwork, together with the opening-out of the nave for the use of the congregation. These works have now been completed, but since the drawing was prepared canopies and other additions are being made to the chapter-stalls and throne.

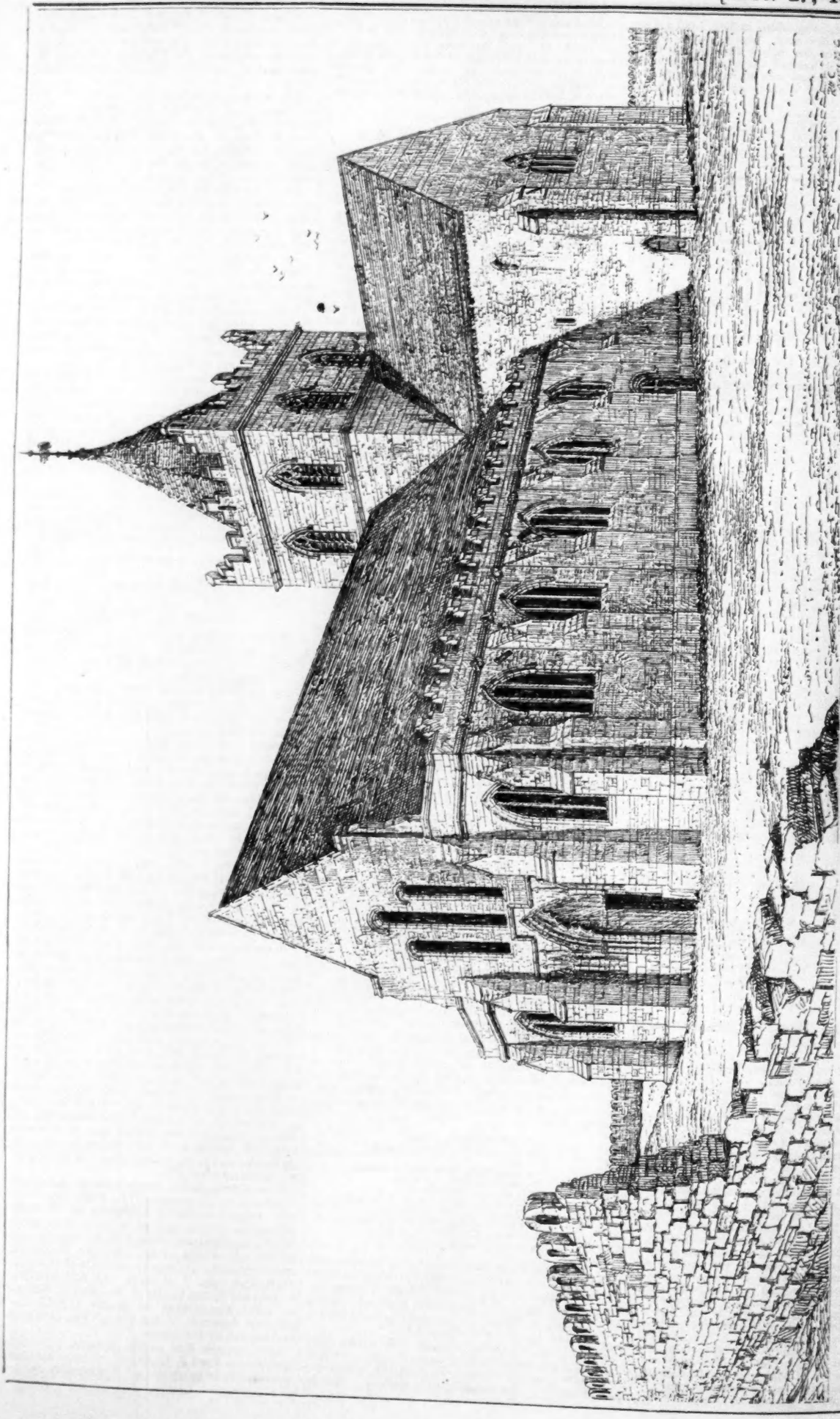
Certain structural works have also been carried out, such as a new roof to the south transept, and the careful repair and strengthening of that of the choir, and others yet remain to be done, as the existing roofs of the nave and north transept are but plaster imitations of massive woodwork, and the arcades and walls are thickly encrusted with "compo" and rotten lath and plaster.

Before these alterations, carried out under Mr. R. Herbert Carpenter and Mr. B. Ingelow, the choir and one bay of the nave and the area of the towers were alone used for services, the alterations of 1834, under Cottingham, having been an attempt to squeeze both choir and congregation into this wholly inadequate space, following the precedent then usual in the case of much larger English cathedrals, and cutting off the nave by a solid stone screen, and using it but as a vestibule to the choir.

The history of the Cathedral, though deeply interesting and intimately associated as it is with the religious and civil life of Ireland, is so voluminous that it can only be touched on so far as it relates to some of the changes and alterations in the structure in both ancient and modern times. Founded by St. Patrick, and known in Celtic times as the "Damhliag Mor" or "great stone church," the Cathedral of Armagh, though much altered and modernised by Cottingham in 1834, yet retains in some of its details and in its general plan the design of its mediæval rebuilders.

From Cottingham's measurements and drawings (fortunately preserved) we learn that there then existed much of the work of Primate O'Scanlain (1261) and of Primate Sweteman (1365), modified and altered by the repairs and partial rebuildings of the fifteenth, sixteenth, and succeeding centuries; while on the church itself and around it were the fortifications carried out by the orders of the Earl of Sussex to resist the attack of Shane O'Neill—ineffectual, however, as the church was captured and burned by the rebels.

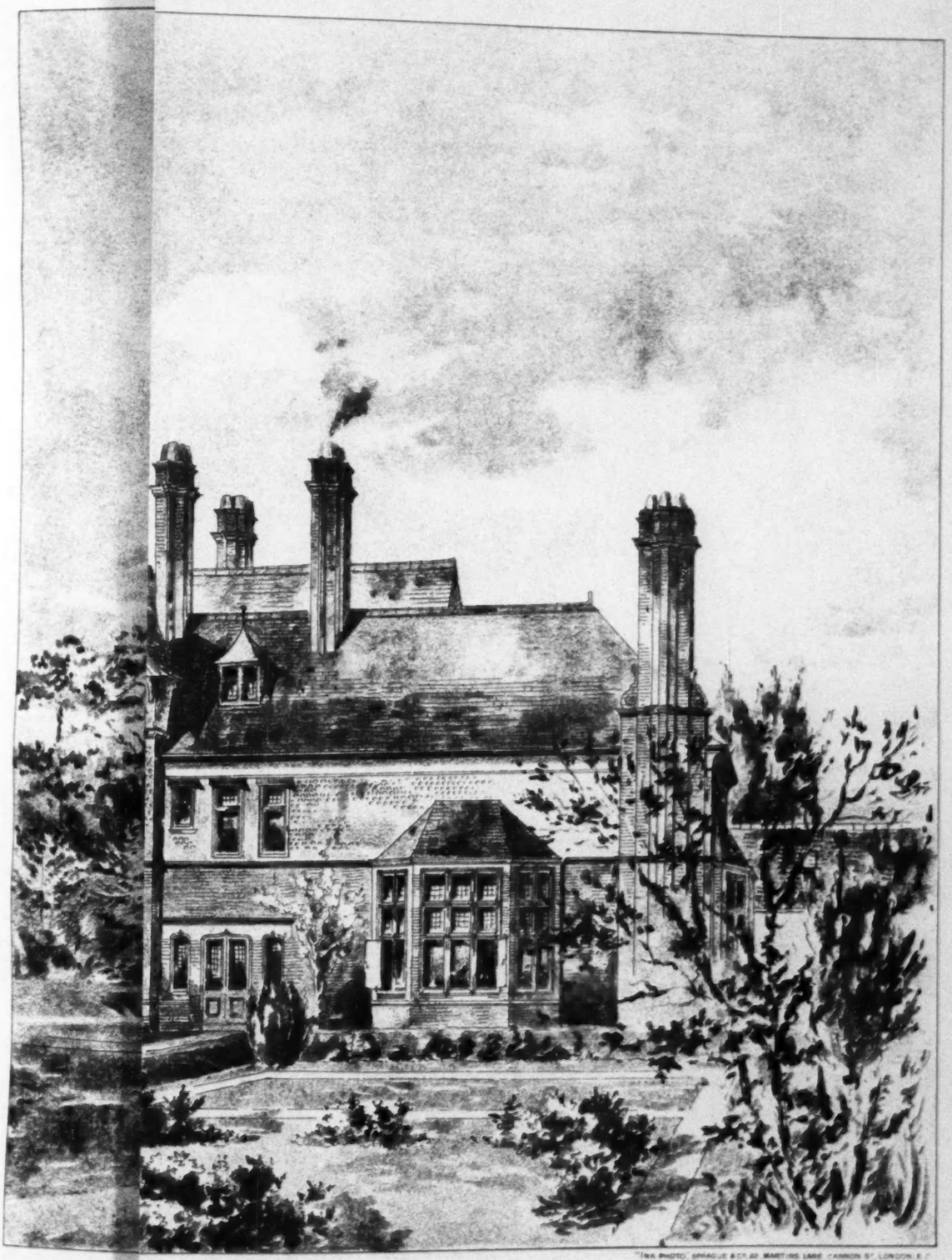
Cottingham's first sketch designs, prepared for Primate Lord J. G. Beresford, show that he was anxious to carry out a "conservative resto-



Armagh Cathedral: View Showing the Cathedral and Fortified Wall before Cottingham's Restoration.
Compiled from Cottingham's drawings and other sources by Mr. R. H. Carpenter.

BABLAKE BOYS' SCHOOL, COVENTRY.—Messrs. Giles, Gough, & Trollope, Architects.

PHOTO-LITHO. BRADBURY & CO. 22, MARTINS LANE CANNON ST. LONDON, E.C.



D PLUMBE, F.R.I.B.A., ARCHITECT.

HATCHFORD, SURREY.—VIEW OF GARDEN FRONT, NOW REBU

"TEN PHOTO" SPRAGUE & CO. 62 MARTINS LANE CANNON ST. LONDON E.C.

REBUILDING.—Mr. Rowland Plumbe, F.R.I.B.A., Architect.

HATCHFORD, SURREY: VIEW OF ENTRANCE FRONT, NOW REBUI

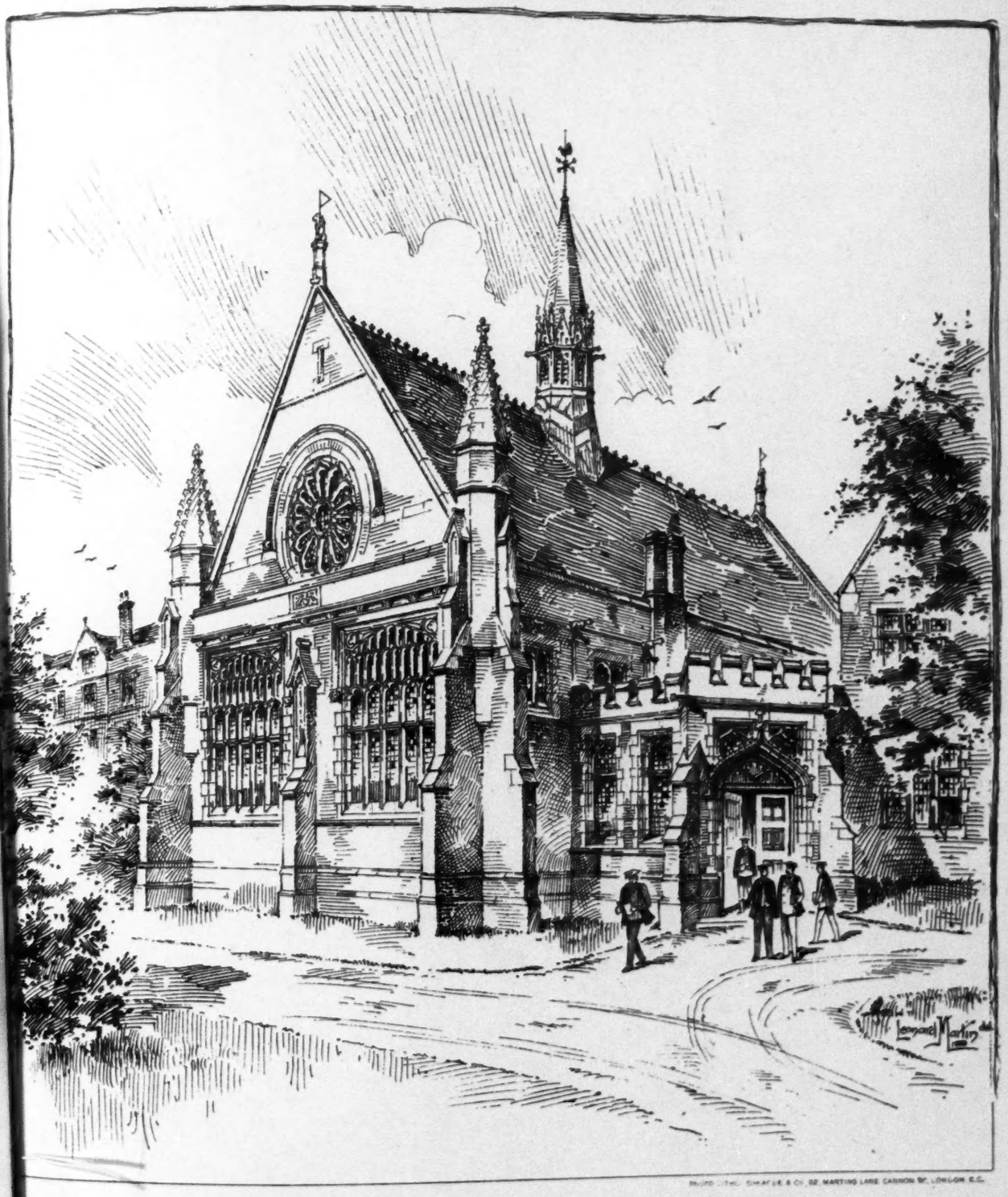
REBUILDING.—Mr. Rowland Plumbe, F.R.I.B.A., Architect.

ARMAGH CATHEDRAL: INTERIOR, SHEWING REFITTING OF C

Royal Academy Exhibition, 1890.

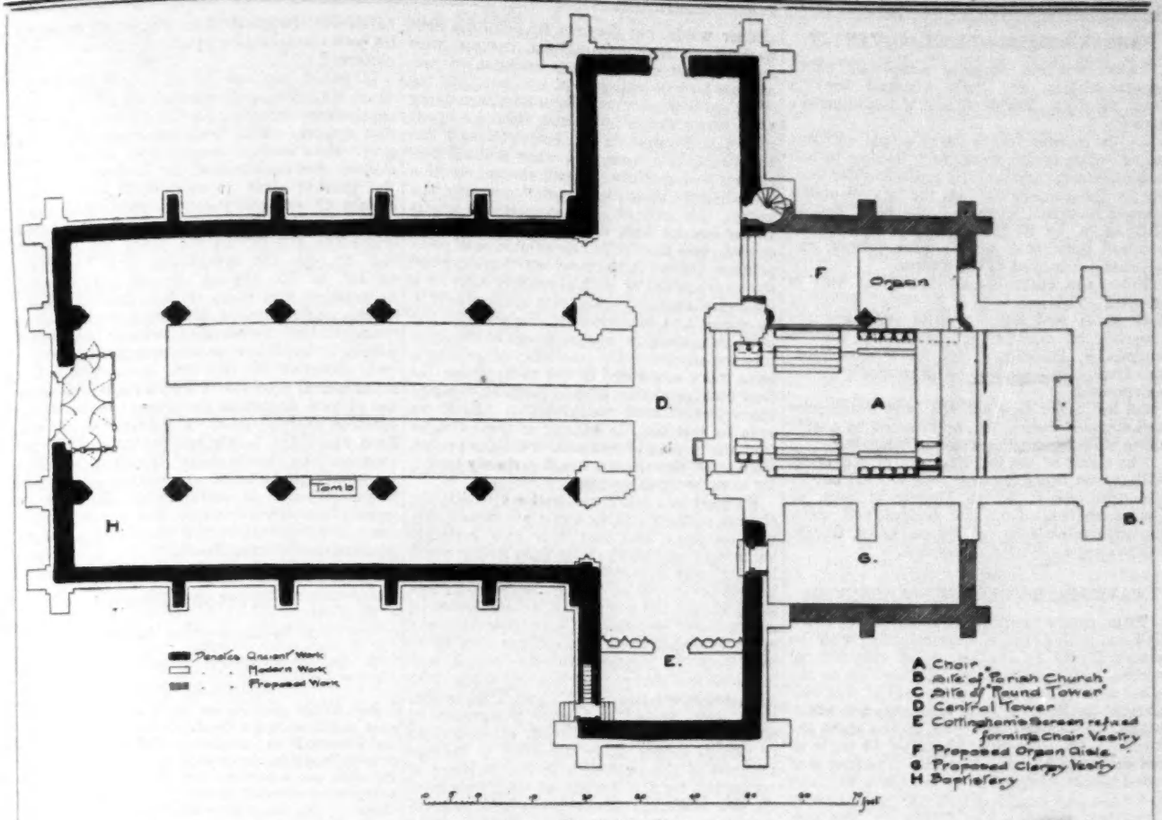
PHOTO-LITHO. SPRAGUE & Co. 37, MARTINS LANE CANNON ST. LONDON, E.C.

CHOIR, &c.—MESSRS. CARPENTER & INGELOW, ARCHITECTS.



CAVENDISH COLLEGE, CAMBRIDGE.—Messrs. Giles, Gough, & Trollope, Architects.

Academy Exhibition, 1890.



Armagh Cathedral: Plan.

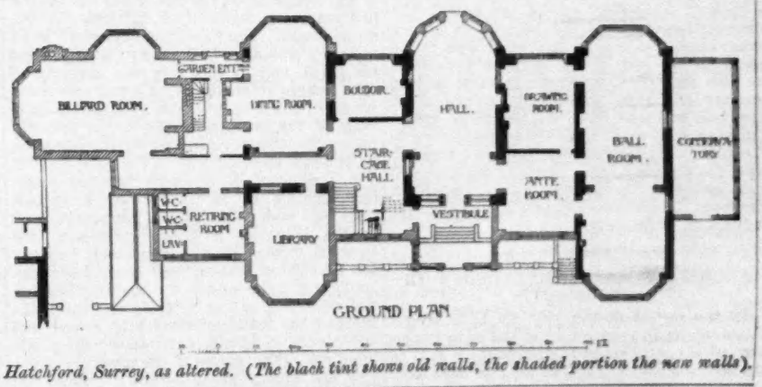
ration," but, unfortunately, he either changed his mind or was overruled, and the whole of the exterior and much of the interior shows by its modern design how little the spirit of Gothic architecture was then understood, even by so accomplished an architect.

In 1802 the altar had been placed at the west end, the choir disused, and, together with the transepts cut off from the nave. Cottingham's task was, therefore, to bring into use again as much as possible of the ancient area of the church. He rebuilt the choir on designs of his own, together with the tower arches, and he reinstated the dilapidated nave, or rather a portion only of it, replaced the whole of the exterior, and refitted the interior.

The choir has now been brought back to its original use, but is adapted to the now reduced number of the Chapter, for whom five stalls on either side are provided. Seats westwards of them accommodate the choir men and boys, while under the eastern arch of the tower are stalls for the vicars choral. The new archiepiscopal throne, a memorial by some of his friends to the late Mr. Beresford Hope, and a gift to the Primate, stands in its proper relative position.

At present the organ, originally erected by Cottingham at the southern end of the south transept, stands in the northern one, immediately under and beyond the lower arch, thus interfering with the proper performance of the services, and rendering the choir almost inaudible; but it is intended, as soon as possible, to remove it to a position, eastward of the singers, in an aisle opening into the choir. A cruciform church, with large central piers, must always be a difficult problem to solve as to the acoustics, and this arrangement is felt to be, on the whole, the best to meet the case.

The throne and stall work have been carried out by Mr. Bowater, of Shrewsbury, aided by Messrs. Collen, of Belfast, the general contractors. The latter firm have reconstructed and adapted Cottingham's oak stalls and seats for the use of the congregation, and have erected the new roof to the transept, and executed the various structural works. The brass and wrought iron gas-fittings are by Messrs. Singer and by Mr. Gawthorpe; the tiles by Messrs. Minton; and the heating by Messrs. Musgrave & Co. Mr. F. E. Smith superintended the completion of the work, after the resignation of the first clerk of works appointed. The drawing of the remodelled interior, from which the principal illustration is taken, was exhibited at the Royal Academy this year. We give also a reproduction of a drawing by Mr. Carpenter, compiled from Cottingham's drawings and other sources, showing the exterior of the cathedral previous to Cottingham's "restoration."



Hatchford, Surrey, as altered. (The black tint shows old walls, the shaded portion the new walls).

HATCHFORD PARK, NEAR COBHAM, SURREY.

THIS house was probably built late in the last century. The principal rooms were to the west, a kitchen wing, with nurseries over, to the east, and beyond the latter were situate the stables. The late owner, some years back, altered the outbuildings, and built a bowling-alley and billiard-room at the back of the stables, but as these were on the basement-floor and approached through the nursery wing, down a staircase and along passages, about 200 ft. away from the dining-room, the present owner decided, on the advice of his architect, to pull down the nursery wing and large range of outbuildings, together with the billiard-room, &c., and to convert the old west wing into a more conveniently-arranged modern residence, re-arranging the whole, and building the billiard-room with retiring-rooms, &c., on the same floor, and immediately adjoining the new dining-room. The old west wing of the house had small entrance and staircase halls, with dining-room behind the former; narrow passages led to the boudoir, library, drawing and ball rooms on either side. The old dining-room has been turned into a spacious hall, two floors high, with gallery all round same. Stone mullioned bay-windows have been built to the various rooms, and the narrow passages have been built out into spacious ante-rooms and staircase-halls, all as shown on the plan. The first-floor has been heightened throughout and a new second-floor rebuilt and arranged in the wide span main roof with gables running into the latter. The old house had a plain painted stucco front of low elevation, with a parapet concealing the roof all round. Additions have been arranged so that the old house is mostly concealed by the new building, but where it does come to the front it is encased with red brickwork on the outside, on basement and ground-floors, and is tile-hung on first-floor. The roof and gables forming the second-floor are entirely new, and show oak half timbered work and barge boards to gables, and Broseley tile-roofs. The stables adjacent to the house are being altered and added to in character with the house. Messrs. Laing, Wharton, & Down are fitting up the whole of the premises with electric light. Mr. J. Boulting is executing the hot-water heating and sanitary work throughout, and Messrs. Forster & Dickson, of London and Rugby, are the contractors. The whole is being executed from the designs and under the superintendence of Mr. Rowland Plumbe, architect.

BABLAKE BOYS' SCHOOL, COVENTRY.

THESE Schools, recently completed, afford accommodation for three hundred boys, a hotel for forty boarders, and a head-master's house.

On the ground-floor is the principal entrance in the centre of the south front, leading to hall and staircase; right and left runs a corridor leading to the class-rooms; on the left an under-masters' common room, and the boys' dining-hall, 55 ft. by 23 ft., capable of dining one hundred boys, with sewing-room, pantry, &c., adjoining, attached to the kitchen.

From the entrance-hall the great hall is entered. This hall is 85 ft. by 38 ft., lighted on both sides and end. Beyond this, and approached by corridors on either side, are the workshops, laboratory, and boys' cloak-room and lavatories,—the two latter entered from the playground.

On the upper floor are the boys' dormitories and masters' rooms, &c., approached by a wide stone staircase leading from entrance-hall.

The whole of the buildings are of red brick, with stone dressings, and were carried out by the contractors, Messrs. Thomas & Sons, of Burton-on-Trent, from the designs, and under the superintendence, of Messrs. Giles, Gough, & Trollope, architects, of London.

CAVENDISH COLLEGE, CAMBRIDGE.

THIS centre portion consists of entrance hall and porter's lodge, communicating with the several blocks by a colonnade of open-pointed arches, with a court to the left, bounded on the other side by the hall. At the end of this, and at right angles to it, runs a passage into which opens, on the left, the hall, on the right, the kitchens, &c. The hall, 81 ft. by 43 ft., is of red brick, interior and exterior. The floor is of wood blocks with a dais at the south end, and the walls to a height of 6 ft. are panelled with American walnut. The roof is an open one, and of pitch-pine, with an open flèche. At the north end, and of the whole width of the hall, is a gallery. Opening out of the hall is the combination-room, which again opens into a court corresponding on the other side to the court on the left of the entrance colonnade. At the rear are the kitchen, buttery, larders, scullery and store-rooms, and servants' hall. The hall will seat 250. The buildings are of red brick with stone dressings, corresponding to the older existing portions, and were, together with the aforesaid older portions, designed and superintended by Messrs. Giles, Gough, & Trollope. The contractors were Messrs. Claridge & Bloxam, of Banbury.

ARCHITECTURAL COMPETITIONS IN GERMANY.

IN the course of the year we have several times referred to the results of the more important of the architectural competitions held in the German Empire, and as we now have some statistics compiled by Professor Stier (Hanover) for his paper on "Results of the German Competitions of the last Twenty-two Years," read at the recent Congress of Architects and Engineers at Hanover, it may be of interest to give an extract from the somewhat formidable rows of figures contained therein.

According to the learned Professor (who, by the by, intends at a date not far hence to publish a volume on the subject) the number of competitions held in Germany since 1868 (the year of the first five opened in that country) is 258; and for these 258 competitions no less than 11,256 designs have been submitted, showing hence an average of forty-four designs, a number which in some cases is, however, far exceeded; as, for instance, the Houses of Parliament work of 1882 alone attracted 182 candidates. In the 258 competitions, 751 awards (with a total value of 930,000 marks) have been given away, and of these awards one "first prize" has fallen to every forty-nine designs. In 216 out of the 258 cases the final result of the competition has been ascertained, but only in 109 instances has the "First Prizeman" had the erection of the edifice; whilst in thirty-one cases the erection fell to the second or third prizeman. In thirty-one other cases the erection has taken place according to the designs, but not under the superintendence, of a successful candidate; and in forty-three cases no building resulted from the competition. Altogether 171 buildings have been erected for 214 competitions with 9,981 designs, or, in plainer words, our German friends have been working at their competition designs with a 1¾ per cent. chance of an erection,—a percentage far below all reason.

We see how many candidates have, according to Professor Stier's interesting statistics, spent their valuable time on the competitions of the last twenty-two years, and what a small percentage have obtained the much-desired erection according to their ideas; yet if one sifts the matter, the state of these competitive affairs abroad has not been as bad as it looks. Anyone who may have visited an exhibition of competition designs in Germany will have noticed the large amount of work absolutely unfit for a place on the walls,—work which has been sent in by young and inexperienced members of the profession, students who, although at the same time not adverse to the possibility of gaining a prize, take advantage of the competition for their own instruction, thereby learning to adapt themselves to fixed requirements; and if we were to subtract the number of these designs from the number of competitive designs proper, the figures throughout would certainly have a far more favourable aspect.

We must take into consideration also that the German competitions, as a rule, are exceedingly well managed, and that this fact certainly encourages candidates to try their strength and hence greatly influences the statistics. When in 1868 the system of having competitions was fairly started, the deputies of the amalgamated architectural societies at once saw that the mode in which these competitions were to be held must be regulated to some extent, and hence we find that at their meeting of the same year, and later again in 1879 and 1883, resolutions were passed and some paragraphs of advice published for the benefit of authorities or private people likely some day to indulge members of the profession in the privilege of competing for the designs of their buildings. On the whole, the advice given in these paragraphs has been followed, and whatever may have been the special faults noticeable at some of the competitions, the candidates but seldom had reason to complain of unfairness in the management. The "appointed assessor" is an unknown personage in Germany; a jury takes his place, and in this jury the majority of members are architects, or, at least, competent judges of the artistic as well as of the practical sides of the question, whilst to the minority belong the laymen, such as mayor, schoolmaster, or museum director, just as the case may be. The possibility of a single person's prejudice against or in favour of a certain class of design playing a prominent part in the judgment is hence minimised; the personal opinion of the competent juryman has the right of making itself heard, but it can be disputed; the vote of the majority decides, and, excepting in one or two stray cases, the decision has found approval both among the unsuccessful competitors and among the public in general. The names of the members of the jury are mostly given on the "competition programme," which has been compiled either under the superintendence, or at least with the sanction, of the jurymen, and hence the competitor not only knows who will judge his design, and can abstain from competing if he does not consider the judgment to be in competent hands, but he has also some guarantee that those who have opened the competition have had some competent advice, and are not likely to ask for what is unreasonable or impossible. The "programme" generally gives the candidate a clear insight into the requirements; it lays stress on the special idea preferable, mentions the material to be used, and often the style to be adopted, gives approximate measurements of the rooms, &c., required, and in most cases a good plan of the site. Only as to one point, *i.e.*, cost, do we continually hear of misunderstandings, as, excepting when very clearly marked, some of the competitors are liable to take the sum as approximate, whilst others take it as the boundary not to be exceeded; the promoters of the competition having been themselves sometimes rather uncertain in their minds as to what they really intended to spend.

As to the draughtsmanship of the designs, the scale (mostly 1·100 or 1·200) for the drawings is always mentioned, the mode of treatment left open; a mounting in a rather decorative fashion is customary. On the whole the competition work shows good line work, done in a sketchy form and touched up with shading in water-colours, mostly monochrome (seldom hatched); the great thing apparently being to let both elevations and plans appear as "pretty pictures."

It would lead too far to go into the details of the statistics, or to mention all the rules and regulations occurring in the German competition system. The foregoing brief notes may give the reader some idea how these matters are managed in the Fatherland, up to the present time at all events; but in some classes of competitions the previous state of things is likely to be considerably changed under the present régime, when the Emperor has an eye for everything, and has gone so far as to appear at an architectural jury-sitting, and there to hold forth his ideas on the subject under discussion, and has even annulled the decisions given by competent judges by opening a second competition on his own account; so that the competitions for monumental erections are now liable to become the prey of despotism; a change to be deprecated on every ground. If followed on the old lines, and if the larger competitions be left uninfluenced by "authorities," the system in Germany is likely to do some good to architecture in general, and is certainly popular, and as usually managed causes the least possible amount of dissatisfaction and petty vexations to unsuccessful candidates.

Correspondence.

To the Editor of THE BUILDER.

THE NEW CODE BUILDING REGULATIONS.

SIR,—Your remarks on the above-named touch very lightly on the subject. If the new "Rules to be observed in planning Public Elementary Schools" are in the main like former documents from the same source, they deserve much more energetic condemnation than you have meted out to them. The language employed is sometimes obscure, if it have not more academic defects. We are gravely informed, for instance, that the "accommodation of each room depends not merely on its area, but also on its shape"—of which Lord Burghley-like sentence the meaning appears to be simply that the accommodation alluded to depends upon dimensions of length and width suitable for the reception of the necessary furniture. The area is only a complication introduced by the department for the computation of claims for grants, and, although useful as a standard of comparison, the statement of it has only been available for the purpose of cramming the space. Again, in describing the drawings required by the department to be submitted to them, "at least four elevations" are stipulated for; one wonders how many the department would like to have, how many buildings have more than four sides? The rule that "No school-room lighted from one side only can be approved" of is one that apparently is made, like the rules of all Government departments, only to be broken—for nearly all the successful plans lately published have class-rooms all along the length of one wall, and some have other class-rooms at the ends. Attempts to observe this rule are only attended by discomfiture, for plans restricted by it meet with no acceptance from boards, committees, or department. These are some of the points which decorate the first page (the bottom right-hand corner of which is very quaintly marked "over")—but I will not go beyond this, as the whole thing may be superseded by the last Code.

The Oldham School Board bought copies of these rules at threepence,* and generously supplied them to intending or would-be competitors, most of them already in possession of the publication at half-a-crown. As the new Code has come out in the interval,—namely, that between the announcement of the competition and the date for sending in designs,—there is likely to be a curious complication.

F. B. P.

AN "EMPLOYERS' UNION."

SIR,—I was glad to see the letter in the *Builder* of the current week under title "An Employers' Union."

The course proposed is, in my opinion, the only one that will efficiently check the existing state of affairs, brought about by the agitators in the name of trade unionism.

As an employer, both in the building trade and also brickmaking, I should be glad to help to form an Employers' Union, and to be a member of the same.

In my opinion every member should pay an amount based on the number of men employed, or wages paid; for we want the small as well as the large employer to join. But all these details must be carefully considered, and the thing must be done well if at all.

J. J.

* We were guilty of an oversight in referring to these rules in our article as "new"; they have been drawn up and in circulation for some time back, but are now issued afresh as part of the New Code.—ED.

"A SANITARY NOTE FROM GREENOCK."

SIR,—The letter signed "X. Y." in the *Builder* of the 20th clearly shows that the writer does not properly understand the subject of house-drainage. His notion that the side fresh air inlet to a disconnecting trap, two yards from the trap, "would give that much greater volume of sewage air to eject on to the street," is simply the height of absurdity. There is nothing in these two yards of piping to raise a smell. For fifty-five minutes out of every sixty, fresh air will be passing into the drain through them, and should this be stopped for a few seconds by the discharge of a closet, &c., the fresh air that has been entering, and filled the piping, has to be first pushed out at the grating before any badly-smelling air can get out.

By the time the badly-smelling air can get the length of the grating, the closet has ceased running, whereupon the bad air turns back the drain and goes up the soil-pipe and out above the roof. This is especially the case when the soil-pipe is inside of the house, as it is in thousands of cases in Glasgow, &c.

I do not remember of a single complaint of smell from a side grating put in as I have indicated.

If in some particular case the discharge of a closet, &c., did cause a smell to come out of this grating, this could be easily cured by putting in an automatic valve below it.

If sewage air has anything to do with the high death-rate of Glasgow children it is not from the gratings of proper disconnecting traps, but from leaking drains and soil-pipes, which leaks "X. Y.'s" ideas would only make more dangerous.

There is also in Glasgow and other places the bad air from the sewers that comes up the gutter gratings at the edge of the pavements to blame for hurting the children. I have for long insisted on these being trapped, as I have often seen the children sitting over them, and have often felt foul sewer air blowing up them.

"X. Y.," like Mr. van Putten, thinks the houses would be safer by allowing the air from the public sewers to pass into the house-drains and up the soil-pipes. They both forget that this would also be letting in the sewer-rats into our houses, and the majority of people would not look upon this as an improvement.

I do not believe Mr. van Putten, "M.Inst.C.E.," when he asserts that the air in our public sewers is less dangerous than that in our house drains. The drainage of many houses has been so much improved of late years, that to do away with their ventilating disconnecting syphon-traps, and let in the sewer-air into their drains and soil-pipes—rats included—would be anything but an improvement.

When fever breaks out in one house or tenement, the disconnecting traps on the other tenements prevent them being contaminated from this fever-house.

Mr. van Putten, as an engineer, ought to know better than to write that, supposing the high-level inlet to a drain is as high, or nearly so, as the outlet, that therefore the air current is "at a complete stand-still." He forgets the effects of difference of temperature and of a good cowl on one of the ends.

As to "X. Y.'s" story of bottled-up gases in tide-filled sewers forcing the disconnecting traps of houses, and also of the sinks and closets in them, that is drawing the long bow. The rain-pipes and the ventilating-pipe of the soil-pipe should relieve these; and if it be really true that no ventilation has been provided by the public authorities for the sewers he refers to, such should be provided, altogether independent of the house draining. For people to spoil their private drains, and let rats into them, in order to benefit the public sewers, would simply be equivalent to committing suicide.

W. P. BUCHAN.

"SKY-SIGNS."

SIR,—As I am sure many of your readers are interested in the above subject, I should like to ask, supposing a sky-sign is erected on premises adjoining my own, and a fire occurs, which causes the sign to topple over and crush my roof, to whom should I look for compensation? If I am insured, I should naturally ask the Insurance Companies to pay; but will they do it? There is nothing in my policy to lead me to believe they will.

J. C. MERRYWEATHER.

DANGEROUS ADVERTISEMENTS.

SIR,—While the question of "sky-signs" is before your readers, may I call attention to another form of advertisement which, though not so common, is very nearly as dangerous and objectionable? It consists in covering the walls of a house with boarding, on which paper advertisements are pasted, on a larger scale than can be attained on the ordinary hoarding, thus setting the Building Act at defiance, and facilitating the spread of fire in the best possible way.

There is a building in King William-street, near London Bridge, which has been covered in this manner from the first-floor to the parapet, for several years. Last week the boards were all removed, and it looked as if the law had been vindicated; but no—they have all been replaced, and will, no doubt, be soon covered with pictures more glaring and irritating than ever.

In Mr. Bannister Fletcher's book on the Metropolitan Building Acts, a case is quoted in which this very proceeding was condemned by a magistrate, as clearly contrary to the Act, and rendering it nugatory. One would like to know if this decision has ever been overruled, and, if not, why it is not acted upon.

AN ARCHITECT.

THE COLONIAL ARCHITECT, NEW SOUTH WALES.

SIR,—Will you kindly correct an error which exists in the note from New South Wales in your issue of the 13th inst., where my old friend, Mr. W. L. Vernon, is stated to have formerly practised in London and Brighton? For the latter town, Hastings should be substituted. He never practised in Brighton.

RICHARD A. HILL, F.R.I.B.A.

The Student's Column.

HOT-WATER SUPPLY.—XIII.

COVERING PIPES AND RESERVOIRS FOR THE CONSERVATION OF HEAT.

THERE is no branch subject in connexion with hot-water work deserving so much attention as this. It is no exaggeration to say that very shortly no apparatus for hot-water supply will be considered complete or finished if the whole system is not insulated, so to speak, so that almost every particle of heat absorbed by the water in the boiler will be obtainable from the taps, instead of nearly 50 per cent. of it being radiated from exposed surfaces, and worse than wasted.

There are at this moment hundreds, if not thousands, of hot-water systems that, by being carefully covered, would be converted from miserably inefficient to highly satisfactory appliances,—this in particular with the tank-system, when the tank is so commonly fixed in a cold, draughty roof.

An interesting instance of the success attending the covering of pipes occurred quite recently, in which a residence was fitted with a complete system of hot-water supply pipes on a scale sufficiently large for a good boiler in a 5 ft. kitchen range, but owing to a delay experienced in obtaining the range in question, another of a smaller size, 3 ft., was fitted up and connected to the chimney and circulating-pipes for temporary cooking and hot-water supply. It was not supposed that this little range with its boiler would do much in the way of water-heating, but to the astonishment of everyone it gave a really abundant supply of very hot water in every part of the house as quickly in the morning and altogether as satisfactorily as a larger range would be expected to do.

This desirable result was wholly brought about by the pipes and cylinder being everywhere carefully covered with a sufficient thickness of felt, so that however hot the water was within the pipes, no heat could be felt outside the covering, a sure indication that no heat was being dissipated.

It really does seem opposed to all reasonable and workmanlike principles to allow such abundant opportunity for heat to be thrown away, while labour and fuel is being expended in the kitchen apparently for this object. If a fitter or maker of steam-engines and appliances did not attend to the subject of this paper in a thorough and workmanlike manner he would be considered to have hardly mastered the rudiments of his business. The waste of heat is not always the only ill-result experienced, as in many instances the warmed air is very objectionable, and if a hot-water pipe is carried alongside a soil-pipe it is possible for a very unpleasant feature to introduce itself. It is a very customary practice for a hot-water fitter to carry his pipes up in the casing that is nearly always to be found passing from the bottom to the top of the house, this casing containing all the different pipes of the house, such as the cold service from the main, the cold service down from cistern, the w.-c. cold-water services, and, very commonly, the soil-pipe. There is no objection to his making use of this casing if it is large enough to hold a few more pipes, and it is often used of necessity, as to carry pipes openly through well-decorated rooms is out of the question; but to carry hot-water pipes up this case without felting them is an exceedingly bad practice, as they are not only brought into contact with very cold surfaces (they have frequently been found wired on to cold pipes, four or five pipes in a bundle), but the heat radiated causes a draught or current of air to set in, as we find in a chimney.

When a casing contains pipes that radiate heat, that casing, within a few moments after the heat is felt within it, is converted into a flue, as by applying heat to air it can be made to circulate to all intents and purposes like water. Air that is brought in contact with heated surfaces becomes heated and rarefied, and, being thus made lighter than the surrounding air, rises, and cold particles immediately flow in to take its place, they becoming heated and following the first particles, and so on, so that it resolves itself into a stream of warmed air, flowing out of the upper part of the casing, and cold air flowing in in corresponding volume below. This may be excellent in practice when hot-water pipes are used for effecting ventilation; but it is fatal to hot-water services which are particularly required to keep the heat within them; in many instances they are cooled at about the same speed as they would be if placed outdoors when a strong wind was blowing.

It may be argued, that if the casing is stopped off at its two extremities, the trouble will be obviated, and so it would be if the casing was *perfectly* air-tight everywhere, and had no cold pipes within it; but this is never the case, there are always numbers of crevices and apertures which permit of a tolerably free ingress and egress of air.

The best material for covering these pipes and also the reservoirs is hair-felt; hair is a natural poor conductor of heat, and nothing surpasses it for this purpose, especially as it is so easy of application. This felt, which is readily obtainable in sheets, is usually cut up in strips for pipe-work; the strips are wound upon the pipe spirally, being secured here and there with cord or wire, but where spiral winding is impossible it can be tied on in lengths, which answers equally well but has not such a good appearance.

The best and most complete arrangement for pipe-work, but which entails a little greater expense, is to have the felt wound on spirally in one direction, say from left to right, and well secured with cord; then cover this with good canvas, also wound on, but in the opposite direction, and this secured with wire.

It is most necessary, to secure the best results, to have the felt thick enough; hair felt is sold in great quantities about $\frac{3}{16}$ in. thick, but this is not thick enough for good work. If possible have it $\frac{1}{2}$ in. thick, and a marked benefit will be had by using even thicker than this, or, say, two thicknesses of $\frac{1}{2}$ in.

In felting cylinders, it is the best plan to take sufficient sheets of felt, and then sew the edges together to form one sheet large enough to go all round the reservoir. This sheet can then best be secured by bands of hoop-iron or brass passed round at top and bottom, and around the middle; these bands being tightened up by having a bolt to draw the two ends together, as fig. 27. After this circular pieces can be cut for top and bottom; these pieces being sewed on to the top and bottom edges of the large sheet. Tanks can be covered in exactly the same way.

Sometimes it is desired to encase the tank or cylinder with woodwork. This makes by far the neatest job, though more expensive, and it causes a little trouble should it be necessary to open the reservoir under some circumstances. If it is decided to have a casing it is very important that the space between the woodwork and the reservoir be well filled-in with some poor conductor of heat, such as cow hair (plasterers' hair), slag wool, or even dry sawdust answers very well when the casing can be filled from the top. If the casing is not "packed" with something it would be much better to be without it, as it would have a current of cold air passing up through it the same as explained with the general pipe casing just referred to.

If the hot-water service-pipes are carried up through the house without entering the general pipe casing mentioned, and it is proposed to encase them for the sake of appearance, this casing must also be packed for the reasons explained, but this is frequently neglected with the worst results, as the casing of pipes is frequently done for appearance sake only, the question of radiation not being considered.

Occasionally it is found practically impossible to carry the pipes up inside the house, in which

case it becomes necessary to carry them outside. This is very objectionable, but where it cannot possibly be avoided the objections do not avail, but they must be guarded against. In the first place, the pipes *must* be encased, and the casing ought to be of fair size, so that 1½ in. of packing can be filled in between the woodwork and any of the pipes. The packing must fill the case tightly, and it is imperative that the casing be well and tightly secured to the wall, as should it get loose the woodwork and the packing will come away from the pipes, and leave them exposed.

When pipes are carried outside, the packing is not only needed to prevent great waste of heat, but there is a danger to be guarded against in cold weather, when the pipes are liable to be frozen and an explosion possibly ensue, as the only outlet for any steam that may be generated in the boiler is at the upper extremity of the expansion pipe, unless a safety-valve is provided.

OBITUARY.

MR. JOHN MOSSMAN, SCULPTOR.—The *Glasgow Herald* announces the death of Mr. John Mossman, sculptor, which took place on Monday morning last, at Port-Bannatyne. Mr. Mossman was in his 74th year. He was born in London in 1817, his father at that time being in the employment of Chantrey. While John was still young his father removed to Scotland, and established himself in business in Leith. Young Mossman assisted his father and became his right-hand man, doing excellent work and much of it. He was, however, anxious to rise in his profession, and, in order to further his art-training, he studied for some time under Baron Marochetti. His progress was steady and thorough, and when thus fairly equipped he came to Glasgow, and, with his brother George, established the monumental works still carried on in Mason-street. Mr. George Mossman died about fifteen years ago. In George-square, Glasgow, the statues of Sir Robert Peel, Dr. Livingstone, and Thomas Campbell, the poet, were executed by him; and in Cathedral-square, he put up the statues of the late Rev. Dr. Norman Macleod and Mr. Lumsden. Several years ago Mr. Mossman was elected H.R.S.A.

THE REV. CHARLES ROGERS, D.D., LL.D., died at his residence in Edinburgh on the 18th inst., at the age of sixty-five. The deceased was indefatigable in his endeavour to perpetuate the memory of eminent Scotsmen. His work was mainly literary, but his name was most prominently brought before the public in connexion with the movement for the erection of the Wallace Monument on the Abbey Craig, near Stirling. This memorial cost 14,000*l.*, and was inaugurated on September 12, 1869, and is in the form of a peel tower, surmounted by an open crown. The tower contains a "Hall of Heroes," where are the busts of several eminent Scotsmen, which are from time to time being added to. Dr. Rogers also took the leading part in the erection of the statue of Robert the Bruce on the esplanade of Stirling Castle, which was completed in 1877, and he took a similar part in the erection of the statue of Hogg, the Ettrick Shepherd, at St. Mary's Loch.

MR. THOMAS NELSON.—The death is announced of Mr. Thomas Nelson, who was for many years engaged in business in Carlisle as a builder and railway contractor. Mr. Nelson made a valuable collection of Burns's manuscripts and other relics.

GENERAL BUILDING NEWS.

THE VICTORIA LAW COURTS, BIRMINGHAM.—The *Birmingham Gazette* reports that the internal fitting of the new Law Courts in Corporation-street is being pushed forward as rapidly as possible, but it is not expected that, under even the most favourable conditions for the work which yet remains to be done, they will be ready for occupation before the end of March next. The panelling of the three police courts, the coroner's court, and the two assize courts, is now practically finished. The doors in the principal corridors and of the courts are of oak, the remainder in pine. All the oak used has been fumigated, to deepen the tone and preserve the wood, and the whole of the carving has been executed in the workshops of Mr. John Bowen, the contractor for the erection of the courts. Now that the buildings are nearing completion, it is seen (says the *Gazette*) that the plan of the six courts,—the three police courts and the coroner's court abutting on the great hall, and the two assize courts in the rear,—is as convenient as it could possibly be, and so far as can at present be judged, the internal accommodation will be both sufficient and satisfactory. The police block fronting to Steelhouse-lane is practically ready for occupation, and the administrative departments in connexion with the courts are ample and convenient. The electric light will be used through the entire block, and the change from the original contemplation, which was to use gas, has caused considerable delay in the completion of the courts. The architects of these buildings are Messrs. Aston Webb and E. Ingress Bell. We gave a view and plan of their design in the *Builder* for July 31, 1886. We also illustrated the sculptural treatment of one of the gables of the building in our number for Dec. 21, 1889.

RUARDEAN CHURCH, GLOUCESTERSHIRE, was re-opened on the 23rd inst., the work of restoration being nearly complete. This work has been carried out from the designs and under the direction of Messrs. Waller & Sons, architects, Gloucester, at a cost of 2,000*l.*, the builder being Mr. H. J. Smith, of Wolverley, Kidderminster. The north and south walls of the chancel, the south-east wall of the aisle, and the entire north wall of the nave, have been repaired. The oak roof of the chancel has been repaired. The roofs of the nave and south aisle have been replaced by new roofs of pitch-pine.

THE NEW MUNICIPAL BUILDINGS, NEWCASTLE-UNDER-LYME.—On the 23rd inst. a public inquiry was held at the Town Hall by Mr. Thomas Codrington, M.Inst.C.E., as to an application by the Corporation for sanction to a loan of 8,500*l.* for sewerage and street improvement work. There was also conjoined an investigation as to the Town Council's expenditure upon the public buildings. A mass of evidence was taken, and the Commissioner will make his report in the usual course.

MESSRS. HUDSON BROTHERS' NEW PREMISES ON LUDGATE-HILL have now been completed and opened for business. They have been built from the designs and under the superintendence of Messrs. J. W. and R. F. Beaumont, architects, the lower part of the frontage being of grey and red granite, supplied by Messrs. Whitehead & Sons, of Aberdeen. The upper part is faced with Bracknell red bricks and Mansfield stone dressings. The premises, of course, look all the better now that Messrs. Hudson have been so well-advised as to take down their "sky-sign."

THE PRINTERS' ALMSHOUSES AT WOOD-GREEN.—A movement is on foot for extending these buildings by covering part of the asylum grounds now vacant, and so providing residences for four additional inmates. It is estimated that 5,000*l.* will be required for the purpose and for permanently endowing the whole building. To this end liberal contributions are urgently solicited.

NURSES' HOME, ROYAL INFIRMARY, EDINBURGH.—On the 22nd inst. a conference took place between the members of the Edinburgh Dean of Guild Court and the Infirmary managers with reference to the nurses' home which the managers propose to build on the grounds. There being a great want of accommodation in the Infirmary for the nursing staff, the managers some time ago placed a commission for plans in the hands of Mr. Sydney Mitchell, architect. The site selected was the open space between the two westernmost pavilions of the surgical and medical sides of the hospital—that is to say, the ground to the north of the westernmost medical wards and south of the westernmost surgical wards. Mr. Sydney Mitchell's plan shows a two-story building occupying a square of about 120 ft. The buildings (according to the *Scotsman*) are grouped on four sides of this square, leaving a square of 60 ft. across in the centre. It provides 140 small bedrooms for the nurses, and a dining-hall. When the Dean of Guild Court proceeded about three weeks ago to consider the plans, they found that without warrant the managers had put in the foundations of the new building. The Court, however, apart from this, asked time to consider the plans, as the members were strongly adverse to seeing the only remaining open space in the Infirmary grounds built over. They argue, and apparently with justice, that this is a departure from the original pavilion scheme on which the hospital was built, which was specially adopted to secure the maximum of light and air; and objection is also taken to the plan of the building, enclosing, as it does, a hollow square, which is prejudicial to the free circulation of air. For a building which is to be used both day and night for sleeping purposes, it is contended that a plan of this nature is not the best that could be adopted. No decision was come to, but the general feeling appeared to be that the Dean of Guild Court was really powerless in the matter, and that the building would have to proceed.

ALDBROUGH CHURCH, in the North Riding of Yorkshire, which has been built at the expense of the Dowager Duchess of Northumberland, at a cost of 1,500*l.*, was consecrated on the 23rd inst., by the Bishop of Ripon. It will seat 120. It is in the Early English style. The architect is Mr. W. T. Hicks, of Newcastle, and the work has been carried out by two denizens of the village, Messrs. Ivison & Brown, who contracted for it.

PUBLIC BATHS AND CENTRAL POLICE STATION FOR LINCOLN.—At the meeting of the Lincoln Town Council on the 17th inst., a general combined scheme for the erection of public baths and wash-houses and a new central police station, was adopted. The cost of the scheme is not to exceed 15,000*l.*

NEW SPINNING MILLS IN THE BOLTON DISTRICT.—According to the *Leeds Mercury*, several new spinning mills are about to be erected in the Bolton district, besides those now approaching completion, and the spindle power increased by at least half a million spindles, bringing the aggregate to close upon seven millions.

THE NEW MARKET HALL AT SANDBACH, CHESHIRE, built on a site given by Lord Crewe (who has also renounced his claims in the future to the market tolls), is rapidly approaching completion. The cost of the building is about 4,500*l.*

LABOURERS' DWELLINGS, CASTLEFORD, YORKS.—On Tuesday evening last Colonel John Ord Hasted, R.E., held a Local Government Board inquiry, at the Local Board offices, Castleford, relative to a proposed scheme for new dwellings for persons of the labouring classes submitted to the Local Government Board, in lieu of those the North-Eastern Railway Company propose to destroy in constructing a new branch of railway in Whitwood Mere. Mr. Gibb, the solicitor to the North-Eastern Railway Company, opened the case on their behalf, and said that the North-Eastern Railway Act of 1889 gave them power to provide a branch line in the parish of Whitwood Mere. They had found it necessary to purchase thirty-three houses, and they required to destroy twenty-six of them. Their scheme to the Local Government Board was to build thirty-six new houses within half a mile of the old ones.

SANITARY AND ENGINEERING NEWS.

HOOLE, NEAR CHESTER.—On the 12th inst., Mr. T. Coddington, C.E., Local Government Board Inspector, sat at All Saints' Schools, Hoole, Chester, to inquire into the proposal of the Hoole Local Board to borrow 1,000*l.* for the purpose of certain street improvements in the district. The Clerk to the Board (Mr. J. P. Cartwright), in explaining the position of the district, said that a large proportion of the railway men and industrial classes amongst the residents had complained of the bad condition of Philip-street and Walker-street. The Board considered those streets ought to be sewered, paved, channelled, and lighted to an extent of which they had already given notice to the owners and frontagers. Since 1865 the Board had borrowed, with the sanction of the Local Government Board, a total of 6,850*l.*, and 4,004*l.* was repaid of that sum.

PROPOSED NEW HARBOUR AT WHITEHILLS, BANFFSHIRE.—Scotch papers state that Messrs. D. & T. Stevenson, the civil engineers of the Fishery Board, have finished their marine survey of the bay in which it is proposed to construct a new harbour at Whitehills, about a couple of miles to the west of Banff. At low water the present harbour is entirely dry, and it extends to only 0·35 acre. According to the plan prepared by the engineers, the whole area of the proposed new harbour would extend to about 0·60 acre, and at high water to 1·6 acre. The engineers estimate the cost at about 9,000*l.* The depth of water in the new harbour will allow the largest boats to come in practically at all states of the tide and discharge their fish.

ASTON AND TREETON WATER SUPPLY.—On the 11th inst., the work undertaken by the Rotherham Rural Sanitary Authority in connexion with the supply of water to the districts of Aston, Catcliffe, Orgreave, and Treeton was completed. The cost of the undertaking has been about 5,000*l.*

WATER SUPPLY AT UTTOXETER.—At the monthly meeting of the Uttoxeter Sanitary Authority, on the 10th inst., the Medical Officer of Health reported, with reference to the intermittent water-supply, that the reservoir at Uttoxeter, when built, was possibly large enough to contain a supply sufficient for the bare necessities of the inhabitants, but was now found quite inadequate to meet the demands, and the question must now be grappled with by the Sanitary Authority. The reservoir, when full, held about 66,000 gallons, which, at an ordinary computation would not be considered sufficient for one day's supply. The matter was referred to a committee for consideration.

THE SANITARY CONDITION OF THIRSK.—On Monday last, at a meeting of the Local Sanitary Authority, the Vicar of the Parish, Rev. W. Teesdale Mackintosh, appeared, and complained of the unsanitary condition of the town, pointing out that it had not been free from fever for a long time. The Vicar submitted a number of propositions for putting the town into a good sanitary condition, but the Authority seemed to think (judging by the report in the *Leeds Mercury*) that the 10,000*l.* or 15,000*l.* necessary to carry them out was too great a price to pay for the improved health of the town.

FOREIGN AND COLONIAL.

FRANCE.—The municipal authorities of Calais propose to inaugurate next month a monumental group, designed by M. Rollin, to the memory of Eustache de St.-Pierre.——In the course of the cutting and embankment works for the new railway line from Mantes to Argenteuil, a well-preserved Gallo-Roman burying-ground has been discovered near Andresy. More than 150 sepulchres have already been found, containing numerous objects, such as coins, jewels, and pottery, which will be preserved in the museum of St. Germain.——The required documents in regard to the scheme for a ship canal between Paris and Rouen have just been deposited at the Hôtel de Ville, Paris. The project has the support of the Minister of Public Works, but is unfavourably regarded by the "Corps des Ponts et Chaussées." The cost is estimated at 135

million francs, and the probable time of transit for vessels between Rouen and Paris at seventeen hours. ——It appears that the new bridge over the Saône, built with the funds left by the late Madame Boucicaut, has already shown signs of failure, and the engineers commissioned to report on its condition consider that immediate operations will be necessary to strengthen the foundations.——A new line of railway, entirely strategic in character, is contemplated between Belfort and Les Vosges, on the recommendation of the War Department. It will be carried out by the Compagnie des Chemins-de-fer de l'Est.——The Municipality of Besançon has voted a subvention of 190,000 francs for the erection of a large hydropathic establishment there, to be carried out on the most complete system.——A committee has been formed at Bordeaux to organise an artistic, industrial, and agricultural exhibition in that town in 1891, when it is proposed to repeat or reproduce some of the principal attractions of the Paris exhibition of 1889. The exhibition is to be held on a large estate outside the town and connected with it by a Decauville railway.——In the Department of the Eure the works necessary for carrying the water of the Avre to Paris were commenced some weeks ago. The water will be conveyed to Paris by way of St. Cloud, where a large reservoir is to be made.——The "Moulin Jacob," on the route from Bergues to Dunkerque, and well known to antiquaries as probably the oldest mill in France, is about to be pulled down.——A group of architects, former pupils of the École des Beaux Arts, are endeavouring to establish a provincial architectural society at Limoges.——The official inquiry held on the Metropolitan railway scheme for Paris submitted by the Eiffel Company, has resulted in a majority of votes against the concession to that Company.——The City authorities of Paris are about to commence the formation of a new public gymnasium, for which the iron buildings formerly raised in the Court of the Tuileries, for the temporary accommodation of the Postal Service, will be utilised.——The Paris "Ceinture" Railway Company has commenced the reconstruction of the Pont de Flandres at the end of the street of that name.——A new bridge is to be proceeded with at Conflans, between Ivry and Charenton. The proposed bridge will run to 200 mètres in length, and will be 16 mètres in width. The cost is estimated at over a million francs.

FLORENCE. — According to *La Construction Moderne*, a museum is to be established at Florence in which will be collected everything relative to the history and design of the Cathedral, under the title of Museum "dell' Opera del Duomo." The same journal states that a number of architectural drawings by Sansovino, Peruzzi, Bramante, and San Gallo, at present hidden away in the Uffizii galleries, are to be framed and exhibited as a portion of the Uffizii collection.

THE NORTH-SEA AND BALTIC CANAL.—According to a paper read by Geh. Ober-Baurath Baensch (Berlin), the construction of this canal has been progressing favourably this summer, and the work is likely to be complete by the autumn of 1895, if unforeseen difficulties are not encountered. The canal will have a length of 98·6 kilomètres, 62 of which are in a straight line, whilst the rest are on curves, with radii varying between 6,000 and 1,000 mètres (1,000 mètres being the smallest radius considered advisable for easy passage of modern ironclads or merchant vessels of great tonnage). In working out the sections, the measurement, "22 mètres bottom, 58 mètres surface, 8½ mètres depth" of water was taken as a minimum suitable to men-of-war passing at low water. Every 12 kilomètres, extra width has been given for siding purposes, such sidings having 60 mètres bottom to a length of 450 mètres. The cubic mètres of ground to be moved have been calculated at 78,000,000 (see *Builder* of May 17) to 80,000,000, of which 15,000,000 have been moved up to date; and for this enormous piece of work there are employed 6,670 workmen, aided by 27 land- and 24 floating-dredges, 4 elevators, 97 engines, 2,700 trucks, 15 steamers, 51 dredge-boats, and 37 steam-pumps, representing a capital of some 12,000,000 marks, or nearly 600,000*l*. At either end of the canal twin-locks have been planned, each of these four structures having a length of 216 mètres; and seawards of these, outer and inner harbours (the latter with some 500 mètres quay frontage each) have been designed. Of other structures of importance on the line of the canal, we may mention the lock connecting the new waterway with the old Unter Eider Canal. Land traffic across the new canal will be worked by five swing-bridges, a fixed bridge, and several ferries; the swing-bridges, when open, permitting a free passage of 36 mètres width, the fixed bridge permitting the passage of vessels with mast-heads forty-two mètres above water.

MEMORIAL TO THE AUTHORESS OF "JOHN HALIFAX."—Soon after the death of Dinah Maria Mulock (Mrs. Craik), in 1887, a scheme for the erection of a suitable memorial of her work was started by some of those who prized that work. It was decided that the memorial should take the form of a marble medallion in Tewkesbury Abbey. The memorial has now been placed in the Abbey. It is the work of Mr. H. H. Armstead, R.A.

MISCELLANEOUS.

THE ALEXANDER THOMSON MEMORIAL.—At a meeting of the Trustees, held in Glasgow on Thursday, the 18th instant, Mr. John Gordon, President of the Glasgow Institute of Architects, in the chair, the prize (value 60*l*.) of the Travelling Studentship for the best set of drawings of a hall with side rooms was awarded to Mr. Chas. R. McIntosh, of Dennistown, Glasgow. The drawings sent in competition were exhibited in the Corporation Galleries.

BEQUESTS IN AID OF ARTISTS.—By the will of the late Mr. Patrick Allan-Fraser, of Hospitalfield, Arbroath, there is to be put in operation a scheme for the assistance and encouragement of young men desirous of following out the professions of painting, sculpture, architecture, carving, or engraving. Funds are also to be bestowed to provide for the comfortable maintenance of aged or infirm professional men, painters, sculptors, or literary men. Various other benevolent bequests, and a large number of legacies and annuities, are also specified. Mr. Allan-Fraser, who was the last of his race, was a painter and an honorary member of the Royal Scottish Academy. He designed and carried out an elaborate and costly mortuary chapel for the reception of the remains of his late wife, and is the author of various publications.

THE FAN-MAKERS' COMPANY. — The prizes awarded by this Company to the successful competitors in the recent Exhibition of Fans at Drapers' Hall were on Tuesday afternoon presented by the Lady Mayoress, in the Egyptian Hall of the Mansion House. Mr. Homewood Crawford, Senior Past Master of the Company of Fan-Makers, at the request of the Lord Mayor, made a brief statement of the objects and results of the exhibition, remarking that the art and industry of fan-making had not been cultivated to any great extent in this country during the present century; but he was happy to say that the efforts of the Company had had the effect of so stimulating the industry that fans of the most beautiful and complex workmanship—hitherto supposed to be incapable of complete production in England—had been manufactured in this country without recourse to foreign aid.

THE ENGINEER TO THE CITY COMMISSION OF SEWERS.—We regret to hear of the somewhat serious illness of Colonel Haywood, the Engineer to the City Commission of Sewers. At the meeting of the Commissioners on Tuesday last, the Chairman (Mr. Deputy Green) expressed his deep regret at the receipt of a letter from Colonel Haywood, stating that his health was very far from what he must from necessity desire himself, or that which the members of the Court desired. He had sought the healing influences of Carlsbad, but he had to return home, where he was transacting the business of the Commission which fell to his department, and he was well informed of everything that went on. For the moment, therefore, he asked that he might be excused from attending before the Commission or before the Committees. This request was unanimously granted.

PROPOSED MEMORIAL TO THE LATE DEAN OF MANCHESTER.—The *Manchester Courier* says that the committee who have under their consideration the proposal to establish a memorial to the late Dean of Manchester have unanimously decided that the memorial shall take the form of a pulpit in the nave of the cathedral.

TECHNICAL CLASSES AND LECTURES.—With the approach of the winter months the many technical classes and courses of lectures are about to commence. The Birkbeck Literary and Scientific Institution, Bream's-buildings, Chancery-lane, commences its sixty-eighth session on Wednesday next. Among the classes and lectures there we may mention those in Quantity Surveying, conducted by Mr. H. Bushell, P.A.S.I.; and on Building Construction, conducted by Mr. W. H. Martin. At this Institution, also, Mr. G. F. Harris, F.G.S., is commencing a course of lectures on "Applied Geology," with special reference to the requirements of architectural and engineering students.——The Working Men's College, Great Ormond-street, Bloomsbury, founded by the late F. D. Maurice, re-opens for its thirty-seventh session on October 6. The classes announced include as usual, all the subjects which may be regarded as necessary for a liberal education; and at a price which places them within the reach of the poorest working man.——The City of London College, White-street, Moorfields, announces that its forty-third session commences on Wednesday next. The Secretary sends us the syllabus of lectures in the Engineering Department, by Professor Henry Adams.——The winter session of the Charterhouse Science and Art Schools and Literary Institute, one of the largest Science and Art Schools in the United Kingdom, and a school which has trained some thousands of teachers for the offices of science lecturers, commences this Saturday, September 27.——The Bow and Bromley Institute, which is doing very good work, has just commenced its first half of the winter session.

THE NINETEENTH CENTURY ART SOCIETY.—Monday, October 6, has been appointed for the reception of Works of Art intended for the Autumn Exhibition (the Twenty-second) of the Nineteenth Century Art Society at the Conduit-street Galleries.

THE ENGLISH IRON TRADE.—The English iron market is in a rather disturbed condition, owing to the dispute between the Scotch ironmasters and the blast-furnace men. The Glasgow warrant market has been greatly excited thereby, and prices have been going up all the week, while makers' quotations are rather unsettled, but they are nearly all higher. This condition of affairs has influenced prices in the North of England, Cleveland pig No. 3 having risen 2s. 3d. per ton. The effect of the Scotch dispute has made itself less felt in the southern markets, but prices there are stiffer. There is greater activity in hematites, which have gone up 1s. 6d. per ton. Partly owing to the rise in pig, finished iron and steel have been pushed up; but there is a good demand as well. Ship-builders are more busy in consequence of the orders they have recently booked, and engineers are also doing better. —*Iron*.

LABOUR DISPUTES.—The Dundee Masons' strike has ended by the men accepting the masters' offer of an advance of ½d. an hour. The men came out for ½d. advance. The strike has lasted fully six weeks. The wages to April 1 next will now be—7½d. per hour to hewers, and 7¾d. to builders.——On Tuesday evening last a meeting was held at the Memorial Hall, Farringdon-street, convened by and in support of the National Union of Stove-Grate Workers, which, as the outcome of a strike at Rotherham in the early part of this year, has already, it is said, 2,000 members, and a footing in eight provincial towns.—Mr. Tom Mann, president of the Dock, Wharf, Riverside, and General Labourers' Union, who occupied the chair, remarked that the main object of that meeting was the strengthening of the London branch of the National Union of Stove-Grate Workers. There were 15,000 of these workers in the various branches of the trade in the metropolis, who laboured during excessive hours for too low pay. Mr. Clements moved a resolution pledging the meeting to support the workmen of Messrs. H. & C. Davis, of Camberwell (who are out on strike), by joining the union and by using every legal means to "prevent anyone taking a job there as long as the dispute lasts." The resolution was adopted.

THE SOUTH WALES ART SOCIETY AND SKETCHING CLUB announce that their third annual exhibition will be opened in the Public Hall, Queen-street, Cardiff, on or about November 15 next. The Committee announce that they are prepared to receive the following for exhibition:—Recently-executed pictures, drawings and sketches in all mediums, and on all materials ordinarily in use; sculpture and modelling, carving in wood, stone, and other materials efficient for the purpose; metal-work, inlaying and mosaic in panels; and small articles of furniture or fittings, &c., which display artistic design or workmanship. The hon. sec. is Mr. J. A. Sant.

PROPOSED "PEOPLE'S TEMPLE" FOR LONDON.—There is a project on foot in London (says the London correspondent of the *Manchester Guardian*) to build a "People's Temple" by covering a space wherein at least 100,000 persons could assemble for the discussion of topics of public interest. The idea is that by roofing an area as large as Russell and Bedford squares there would be an end to such dissatisfaction as has attended the loss of Trafalgar-square for meetings, and that such a temple would be free from the disadvantages of Hyde Park. The People's Temple is to be beautiful, and subdivisible when required, so that discussion on many subjects could be going on at the same time. So far the London correspondent. When the funds and the site for the proposed building have been procured it will be time enough to think of solving the problem which this probably imaginary scheme would involve.

A CLERGYMAN WORKING AS A MASON.—What is described as "a novelty in church restoration" affords material for a paragraph in all the newspapers. It is stated that the restoration of the parish church of Marsworth, a village near Tring, has been accomplished under extraordinary circumstances. The Rev. F. W. Ragg was appointed to the vicarage in 1880, when, notwithstanding some partial works which had been executed, he found the principal parts of the church—the windows, walls, buttresses, roof, and tower itself—in a very unsound state. About 200*l*. was subscribed towards the restoration; but, although this was altogether inadequate, Mr. Ragg set to work himself as an ordinary mason, and with the aid of one worker in stone, and a few farm-labourers, who voluntarily assisted, he accomplished all that could under the conditions be done. With this help alone he restored the windows, took down the dangerous buttresses and rebuilt them, made good the south wall, and with the aid of a carpenter raised the roof of the nave. He then had no funds left wherewith to pay the mason and carpenter for further services, but he kept on with the work, completing buttresses and walls, building a parapet, refacing the tower, cutting and erecting a chancel arch, &c. Then an attack of rheumatic fever, due to exposure when working, disabled the energetic clergyman, but on his recovery he put in several windows and completed other work." If our memory serves us, this is not the first instance of the kind during the last fifty years.

COMPETITION, CONTRACTS, AND PUBLIC APPOINTMENTS.

COMPETITION.

Nature of Work.	By whom Advertised	Premium.	Designs to be delivered.
*Plans for New Cemetery	Melton Mowbray L. B.	20 and 10 guineas..	Jan. 30/91

CONTRACTS.

Nature of Work or Materials.	By whom Required.	Architect, Surveyor, or Engineer.	Tenders to be delivered.
*Three Residences, Rhyl	.....	R. E. Hughes	Sept. 29
Service Tanks and Water Mains	Newton Abbot U.R.S.A.	Samuel Segar	Sept. 30
Three Houses, Cardiff	Trustees of Welsh Presbyterian Church	Chas. Rigg	do.
Cottage, &c. near Linkwood, Elgin, N.B.	Felling (Newcastle-on-Tyne) Local Board	A. & W. Reid	do.
Slag and Whinstone Road Metal	Belfast Union	*Official*	do.
Dispensary Buildings	Edinburgh, &c. Water Trustees	Young & Mackenzie	do.
Flint Road Metal, Hove, Brighton	St. George's (Bristol) U.S.A.	*Official*	do.
Cast-iron Pipes and Castings (450 tons)	New Malden Loc. Bd.	J. & A. Leslie & Reid	do.
Roadmaking, &c.	Bromley Local Board	W. Cloutman	do.
Road Metal	Glasgow Impt. Trus.	*Official*	do.
Road Materials	.....	do.	do.
Additions, &c. to Model Lodging House	.....	do.	do.
Thirty-two Houses, Elliot Town, New Tredegar	Powell Duffryn Co.	.....	Oct. 1
Kerbing and Channelling	Shirley and Freemantle Local Board	H. J. Weston	do.
House, Shop, Carriage Sheds, &c. Southampton	J. Betteridge	Lemon & Blizard	do.
Repairing Groynes	Hove Commissioners	*Official*	do.
Two Detached Villas, Ashburton, Devon	Ashburton Building Co. (Lim.)	W. Rowell	Oct. 2
Road Improvement Works	Halifax Corporation	E. R. S. Escott	do.
New Street and Eighteen Scullery Houses, Halifax	.....	Jackson & Fox	do.
*Paving Carriageway	Bethnal Green Vestry	F. W. Barrett	do.
Entrance Lodge to Recreation Ground	Walker (Newcastle-on-Tyne) Local Board	*Official*	Oct. 3
Main Brick and Pipe Sewers	Sheffield Sewerage, &c. Committee	G. Alsing	do.
*Making-up Roads and Paving Crossings	Friern Barnet Loc. Bd.	G. Clarke	do.
Re-building Destructor, Burmantofts, Leeds	.....	Borough Engineer	Oct. 6
Cottage and Garden Walls, Trehan, near Saltash	.....	S. P. Hosking	do.
Providing and Fixing Kerbing (2,000 feet)	Ham Common Loc. Bd.	Mr. Warner	do.
Three Steel Receivers for Compressed Gas	Trinity House Corp.	*Official*	do.
Two Steel Bell Buoys	do.	do.	do.
Alterations and Additions to Property, Grantown, N.B.	.....	Geo Sutherland	do.

CONTRACTS.—*Continued.*

Nature of Work or Materials.	By whom Required.	Architect, Surveyor, or Engineer.	Tenders to be delivered.
*Steam Roller	Bermondsey Vestry	*Official*	Oct. 6
*Supply of Edge Curbing	do.	do.	do.
Levelling, Metalling, Draining, &c. Roads	Egham	Windsor R.S.A.	Wm. Menzies	Oct.
*Sorting Office, South Woodford	Com. of H.M. Works	*Official*	do.
*New Road	Brentford Local Board	J. H. Strachan	do.
*Four Cottages, Basingstoke Station	G.W.R. Co.	*Official*	do.
*Rebuilding "Plough Inn," Coventry	J. Eadie, Esq.	H. W. Chattaway	Oct. 6
*Repointing Chimney Stacks and Shaft	Shoreditch Guardians	F. J. Smith	do.
*New Tanks and Buildings for Sewage Treatment	Crewkerne, S. A.	*Official*	do.
New Board Schools and Master's House	Middleton-in-Teesdale School Board	.....	Oct. 9
Cemetery Chapel	Beaulieu Burial Board	do.	do.
Roadmaking and Fencing	Ryton (Parish) L. B.	do.	Oct. 11
Sewerage, Pipe-laying, &c.	do.	do.	Oct. 13
*Erection of School	Swindon School Board	B. Binyon	do.
*Machinery for Sewage Disposal Works	Teddington Local Bd.	*Official*	do.
Flint, &c. Road Metal	West Sussex C.C.	Chas. Adcock	do.
Drainage and Water Supply to Workhouse	Ongar Union	*Official*	Oct. 14
*New Police Court, Wandsworth	Com. of H. M. Works	do.	do.
New Church, Waterdale, Doncaster	.....	Herbert Athron	Oct. 15
Sinking Pit Shaft (30 fathoms)	Newton&Cap (Darlington) Colliery	.....	No date
Additions and Alterations to Workhouse, Ponteland	Castle Ward Union	.....	do.
Catholic Infant School, Wallsend, Northumberland	.....	W. Lister Newcombe	do.
Seven Houses, Boiler House, Chimney, &c. Bramley, Leeds	J. J. Binns	C. Walker	do.
Two houses, Burley Hill, Leeds	A. Bell	W. A. Hobson	do.
New Board School	Hoyland Common (Barnsley) Sch. Bd.	John Evers	do.
Masonry and Excavating Barbon Manor House	Sir U. K. Shuttleworth, Bart. M.P.	F. W. Dixon	do.
Roadmaking and Draining, Edinburgh	.....	C. J. Ferguson	do.
House and Three Cottages, Cowbridge	W. W. Nell	Jas. B. Dunn	do.
*Superstructure of New Offices, Leeds	Prudential Assur. Co.	F. J. Veall	do.
		A. Waterhouse	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary	Applications to be in
*Surveyor's Accountant	Hastings Town Coun.	2*l.* 5*s.*	Sept. 29
*Surveyor and Inspector of Nuisances	East Molesey L.B.	100*l.*	Oct. 1
*Clerk of the Works	Bermondsey P. L. Com.	4*l.*	Oct. 7
*Clerk to the Board	Hornsey Local Board	400*l.*	Oct. 11
*Two Foremen of Works, Gold Coast	Crown Agents for Colonies	250*l.*	Oct. 15

Those marked with an Asterisk (*) are advertised in this Number. *Competition, p.* iv. *Contracts, pp* iv., *and* vi *Public Appointments, p.* xvi. *and* xvii.

LEGAL.

LIVERPOOL CONSISTORY COURT:

FACULTIES FOR NEW WORKS.

A SITTING of the Consistory Court for the Diocese of Liverpool was held on Tuesday afternoon at St. Nicholas's parish church, before the Rev. Canon Stewart, surrogate to the Chancellor. The following report of the proceedings is from the *Liverpool Post*:—

An application was made by the Rev. Canon M'Neile, of St. Paul's Church, Prince's Park, for a faculty to erect a carved oak reredos by the east window of the chancel, having in it a copy of "The Last Supper," of Leonardo da Vinci. The reredos is to be erected at the expense of Mr. and Mrs. W. Nicol, of St. Michael's Hamlet.

The faculty was decreed by the Court, as was also one asked by the Rev. G. Howell, of Christ Church, Everton, for the re-flooring of the chancel with white and red marble, at the expense of Mr. R. G. Dalgleish.

A faculty was granted for the insertion in the east window of the parish church, Farnworth, of stained glass, the central subject of which is to be the Saviour on the Cross. The Rev. J. R. Jones, who made the application, explained that the window—which would cost from 300*l.* to 400*l.*—was being erected by Mr. Moss Horsfall in memory of his great grandfather, the Rev. Thomas Moss, who was for forty-seven years vicar of the parish, and who died and was buried in the district 100 years ago.

An application by the Ven. Archdeacon Clarke for a faculty to insert in one of the side windows of Christ Church, Southport, a stained-glass window, with the subject, Christ, the Good Shepherd, in memory of the late Mr. Pearman—once curate of the church, but who died last October—was granted.

PARTNERSHIPS. — Mr. W. J. Gant, architect, Hastings, has taken into partnership Mr. C. H. Slatter, of Nottingham. The style of the firm will be "Gant & Slatter."——Mr. John H. Fraser (lately in partnership with his brother, Mr. G. C. Fraser, as Fraser & Fraser, at Bromley-by-Bow), has now, we understand, taken works at Millwall, which are being fitted with the newest machinery and plant for the production of boilers, bridges, tanks, &c. He has taken into partnership his son, Mr. Harry J. Fraser, who has a practical knowledge of the trade, and the firm will be known as John Fraser & Son.

FAILURES IN THE BUILDING TRADES.—According to *Kemp's Mercantile Gazette*, the number of failures in the building and timber trades gazetted in England and Wales during the week ending September 20 was only seven, as compared with 13 in the corresponding week of 1889, and 10 in the corresponding week of 1888.

MEETINGS.

SATURDAY, SEPTEMBER 27.

Association of Public Sanitary Inspectors of Great Britain.—Visit to the Crematorium at Woking. Train from Waterloo Station at 2.17 p.m.

THURSDAY, OCTOBER 2.

University College.—Professor Roger Smith on "The Technical Education of Architects." 7.30 p.m.

FRIDAY, OCTOBER 3.

Sanitary Institute (Lectures for Sanitary Officers).—Sir Douglas Galton on "Ventilation, Warming, and Lighting." 8 p.m.

RECENT PATENTS:

ABSTRACTS OF SPECIFICATIONS.

15,713.—VENTILATING ROOFS, &C.: *T. W. Helliwell.*—The object of this inventor is to ventilate roofed structures in such a manner that, whilst allowing for the entrance and egress of atmospheric air, snow, rain, &c., is prevented from entering. This is claimed to be effected by curving the strips inward, and by the use of louvres also curved, so as to overlap each other, keeping out the rain but admitting air.

1,856.—ROUGH-GLAZED AND COLOURED FACING-STONES: *A. Boult.*—According to this invention, cement facing-stones are made under pressure in moulds. The stones are rubbed with a scraper, and, where necessary, are coloured with a weather-resisting mixture or facing. Glazing is applied in a manner similar to the water-glaze process.

3,827.—GUARD OR SHIELD FOR PAINT-BRUSHES: *J. E. Pepper.*—By this patent a guard or shield is fitted to the brush. This guard is of tubular shape, with one end closed, and is screwed into the handle of each brush, the open end enclosing the brush so as to have only as much of it projecting as may be required. As the brush wears by use the shield is screwed up the shank, so as to leave sufficient protection for the brush. The guard or shield may also be enlarged by making a flange, on the closed end, which will give it sufficient buoyancy to float in the water.

4,299.—MORTISING MACHINES: *T. R. Lees.*—The machines which are the subject of this patent have a revolving shaft and crank, and a combination of adjustable levers and balance-weight, giving a variable and reciprocating motion to the chisel operating upon the lever.

4,608.—WOOD-BLOCK FLOORING: *C. J. Longley.*—According to this invention, a tapered groove runs along the side of the blocks to receive the tapered ends of the lower portion of the blocks. The upper portions of the blocks are cut square, but the lower portions are a little longer at each end to fit the grooves referred to.

8,878.—WATER-CLOSETS: *W. Macnamara.*—This invention consists of a box of sufficient size to enable a person to sit comfortably, and so constructed as to swing outwards through a frame in the back wall of the closet over the pan when in use, and inwards so as to expose the pan when not in use. The inward movement causes a flushing of the closet, and the outward the refilling of a cistern. The door of the closet cannot be opened until the box is drawn inward.

NEW APPLICATIONS FOR PATENTS.

September 8.—14,071, W. Sanday, Hand-planing and Surfacing Apparatus for Wood, &c.

September 9.—14,126, A. Eadie and J. Tannahill, Joints or Connexions for Pipes, &c.—14,129, E. Wilford, Unions or Couplings for Pipes.—14,139, J. Taylor and others, Fireplaces or Grates. — 14,143, P. Koch, Planing-machines.—14,153, J. Macdonald, Ventilating Sash-bars or Astragals.—14,162, J. Bott, Circular Saws.—14,184, J. Sears, Ventilators. — 14,188, H. Balbian, Pipe Couplings.—14,201. R. Grimaldi, Moulds for the Production of Inlaid Designs on Tiles.

September 10.—14,218, J. Adams, Door-springs.—14,224, E. Osborne, Paved Streets or Roads.—14,236, J. Bellen and E. Cocks, Raising, Lowering, and Balancing Window Sashes or Shutters.—14,262, J. Sears, Ventilators.—14,271, C. Reynolds, Door-hanger.

September 11.—14,289, F. Smith, Ventilating.—14,294, E. Eden and W. Day, Glaziers' Sprig-cutter.—14,296, W. Morrison, Wall Ventilators.—14,312, J. Gibbins, Automatic Door-fastening.—14,325.—W. Laycock, Window-lifts and Draught-excluders.—14,328, H. Bonnycastle and T. Rymer-Jones, Refractory and Non-conducting Bricks, Blocks, Tiles, &c.—14,346, E. Olroyd, Warming and Ventilating Hospital Wards, &c.—14,351, J. Rae, Securing Door-handles to their Spindles.—14,359, L. Fargue, Stained or Ceramic Transparent Glass Windows.—14,362, A. Hogan, Machine for Cutting Laths.

September 12.—14,398, C. Forell, Manufacturing from Roman Cement a Composition similar to Portland Cement.—14,406, J. Jones, Ventilation of Drains.

September 13.—14,427, K. McKenzie and G. Anderson, Chimney-tops.—14,439. J. and T. Clemenson, Portland Cement, &c.—14,460, E. Edwards, Electric Bells.

PROVISIONAL SPECIFICATIONS ACCEPTED.

7,342, W. Cox, Ventilators.—11,771, W. Morrison, Door-closing Apparatus.—11,893, S. and J. Filton, Windows.—12,753, E. Urry and G. Farini, Closing of Doors.—13,279, E. Hindle, Drain-pipes.—13,306, G. Farini, Spring-door Hinges. — 13,336, A. Cashin, Securing Knobs or Handles to Door-locks, Latches, Door-knob Roses, &c.—13,399, J. Wilson, Stench-traps.—13,438, C. Brook, Carpenters' Squares, &c.—13,476, W. Downing, Weather-bars or Draught Excluders. — 13,502, E. Hanworth, Draught and Rain Excluder for Outer Doors of Buildings.—13,625, J. Braidwood and C. Gauntlett, Fireproof Construction of Buildings.—13,647, G. Tunks, Chimney-cowl.

COMPLETE SPECIFICATIONS ACCEPTED.

Open to Opposition for Two Months.

14,310, J. Newnham, Registering Mortice-lock.—17,422, F. Podany, Clearing Timber of Sap.—17,759, H. Bassett, Building Material for architectural and other purposes.—723, W. Thompson, Sash-locks or Window-fasteners —8,402, R. Frame and C. Neff, Water-closet Fittings.—8,606, S. Bryan, Treatment of Slag for Building Blocks, &c.—9,010, J. McPhun, Mortising-machine.—10,917, W. and J. Green, Locks for Doors, &c.—11,444, W. Thompson, Spiral Stairway. — 11,447, W. Brennan, Seals for Bolts, &c. — 12,621, E. Crane, Detecting Leakages in Soil-pipes, &c.

CONTEMPLATED IMPROVEMENTS AT GOOLE.—At an adjourned meeting of the Local Board at Goole on the 9th inst., Mr. H. B. Thorp presiding, an important report of the Surveyor (Mr. E. C. B. Tudor) was taken into consideration. It was in reference to the expenditure of between 3,000*l.* and 4,000*l.* in street improvements, &c., which have been rendered necessary by the growth of the town. The consideration of the matter was adjourned to allow of time for a reply from the Local Government Board as to the conditions of a loan for defraying the cost of the improvement.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

SEPTEMBER 16.—By *H. G. Betts:* 94, 95, and 96, Aubin-st., Lambeth, u.t. 30 yrs., g r. 23*l.* 10s., r. 109*l.* 4s., 480*l.*; 33 and 39, Mitre-st., Lambeth, u.t. 9 yrs., g.r. 2*l.* 10s., r. 64*l.*, 115*l.*; and 6, 7, and 12, New-st., Lambeth, u.t. 9 yrs., g.r. 2*l.* 10s., r. 100*l.* 2s., 135*l.* By *Salter, Rex, & Co.*: 23, Harmood-st., Kentish Town, u.t. 12 yrs., g.r. 4*l.* 4s., r. 28*l.*, 145*l.*

SEPTEMBER 17.—By *Foster & Cranfield:* 5 and 6, Church-pl., Ealing, c., r. 28*l.* 12s., 170*l.*; 7 acres of copyhold land at Ruislip, 340*l.*; 6, Burlington-gdns., Acton, u.t. 86 yrs., g.r. 9*l.*, r. 30*l.*, 285*l.*; 24, Burlington-gdns., u.t. 86 yrs., g.r. 9*l.*, 180*l.*; 15, Wormington-rd., Kensington, u.t. 76 yrs, g.r. 7*l.*, r. 40*l.*, 250*l.*; 194, Wormington-rd., u.t. 85 yrs., g.r. 7*l.* 10s., r. 57*l.* 4s., 195*l.*; 17 and 19, Wheatstone-rd., Kensington, u.t. 85 yrs., g.r. 15*l.*, r. 84*l.* 11s., 325*l.*; and 4, Rendle-st., Kensington, u.t. 86 yrs., g.r. 7*l.* 10s., r. 52*l.* 13s., 260*l.*

SEPTEMBER 18.—By *C. C. & T. Moore:* 38, Treherne-rd., Brixton, u.t. 73 yrs., g.r. 5*l.*, 300*l.*; 206, Burdett-rd., Mile-end, u.t. 76 yrs. g.r. 6*l.*, r. 30*l.* p.a., 240*l.*; 9, Turner's-rd., Stepney, u.t. 71 yrs., g.r. 4*l.* 10s., r. 26*l.*, 215*l.*; and 18, St. Leonard's-av., Bromley-by-Bow, f., r. 19*l.* 10s., 195*l.*—By *Newbon & Harding:* 3, Canonbury-pk. South, Canonbury, u.t. 46 yrs., g.r. 9*l.* 10s., 500*l.*; and 36, Newton-st., Hoxton, u.t. 42 yrs., g.r. 5*l.*, 290*l.*

SEPTEMBER 19.—By *Messrs. Cobb:* "Idley Court Farm," Meopham, Kent, and 410a. 1r. 28p., f., 7,000*l.*; and three enclosures of land at Meopham, 11a. 1r. 10p., 275*l.*

[*Contractions used in these lists.*—E.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard, &c.]

PRICES CURRENT OF MATERIALS.

TIMBER.	£.	s.	d.	£.	s.	d.
Greenheart, B.G. ....ton	6	10	0	7	5	0
Teak, E.I. ....load	10	0	0	13	0	0
Sequoia, U.S. ....foot cube	0	2	3	0	3	0
Ash, Canada ....load	2	10	0	4	5	0
Birch ,, ...	2	5	0	4	5	0
Elm ,, ...	3	10	0	4	15	0
Fir, Dantsic, &c.	2	0	0	3	15	0
Oak ,, ...	2	10	0	4	10	0
Canada	5	0	0	6	10	0
Pine, Canada red	2	10	0	3	10	0
,, yellow	2	0	0	5	10	0
Lath, Dantsic ....fathom	5	0	0	6	0	0
St. Petersburg	5	0	0	7	0	0
Deals, Finland, 2nd & 1st. std. 100	7	15	0	10	0	0
,, ,, 4th and 3rd	7	0	0	7	10	0
Riga	6	0	0	8	10	0
St. Petersburg, 1st yellow	9	10	0	14	10	0
,, 2nd ,, ...	7	10	0	9	0	0
,, white	7	0	0	10	0	0
Swedish	7	0	0	15	0	0
White Sea	8	0	0	17	0	0
Canada, Pine, 1st	13	0	0	24	0	0
,, ,, 2nd	9	0	0	16	0	0
,, ,, 3rd, &c.	7	0	0	10	0	0
,, Spruce, 1st	8	10	0	10	10	0
,, ,, 3rd and 2nd ..	6	10	0	8	0	0
New Brunswick, &c.	5	10	0	7	10	0
Battens, all kinds	4	10	0	15	10	0
Flooring Boards, sq., 1 in., prepared, First	0	10	0	0	14	0
Second	0	8	0	0	10	6
Other qualities	0	6	0	0	7	9
Cedar, Cuba ....foot	0	0	3½	0	0	4
Honduras, &c.	0	0	3½	0	0	4½
Mahogany, Cuba	0	0	4½	0	0	6½
St. Domingo, cargo average ..	0	0	4½	0	0	6½
Mexican ,, ...	0	0	4½	0	0	5½
Tobasco ,, ...	0	0	5½	0	0	6½
Honduras ,, ...	0	0	5½	0	0	6½
Box, Turkey ....ton	4	0	0	13	0	0
Rose, Rio	13	0	0	19	0	0
Bahia	12	0	0	18	0	0
Satin, St. Domingo ....foot	0	0	9	0	1	3
Porto Rico	0	0	10	0	1	6
Walnut, Italian	0	0	4	0	0	7

METALS.						
IRON—Bar, Welsh, in London tn	6	10	0	6	17	6
,, ,, at works in Wales	6	0	0	6	10	0
,, Staffordshire, in London ..	7	0	0	8	0	0
COPPER—British, cake and ingot	65	0	0	65	10	0
Best selected	67	0	0	68	0	0
Sheets, strong	73	0	0	74	0	0
Chili, bars	61	5	0	0	0	0
YELLOW METAL	0	0	6½	0	0	6½
LEAD—Pig, Spanish ....lb.	0	0	0	0	0	0
English, com. brands ....ton	13	11	3	13	12	6
Sheet, English, 3 lbs. per square foot and upwards	0	0	0	0	0	0
Pipe	15	0	0	0	0	0
ZINC—English sheet ....ton	15	10	0	0	0	0
TIN—Straits	25	10	0	26	0	0
Australian	102	10	0	0	0	0
English Ingots	101	10	0	0	0	0
	104	0	0	0	0	0

OILS.						
Linseed ....ton	24	10	0	24	15	0
Cocoanut, Cochin	33	10	0	34	0	0
,, Ceylon	32	10	0	0	0	0
Palm, Lagos	29	0	0	0	0	0
Rapeseed, English pale	31	0	0	0	0	0
,, brown	29	10	0	0	0	0
Cottonseed, refined	21	10	0	0	0	0
Tallow and Oleine	21	0	0	40	0	0
Lubricating, U.S.	5	10	0	6	0	0
,, refined	7	0	0	12	0	0
TAR—Stockholm ....barrel	1	1	6	0	0	0
Archangel	0	15	0	0	0	0

TENDERS.

[Communications for insertion under this heading must reach us *not later than* 12 noon on *Thursdays*.]

BECKENHAM (Kent).—For the erection of Parish-room, for St. Michael's and All Angels, Beckenham, Kent. Mr. P. Brown, architect, Anerley :—

Caplen & Redgrave, Croydon*	£732 0 0

* Accepted.

CATERHAM.—For erecting four pairs of cottages, for Mr. Walter Smith. Mr. Fredk. Elliff, architect, Caterham Valley :—

Ward	£1,618 0 0
Waddington & Co., Limited	1,600 0 0
Harman	1,536 0 0
Scrivener	1,321 0 0

CONISTON (Lancs.).—For building billiard-room, conservatory, &c., at Holywath, Coniston, for Mr. Barratt, J.P. Messrs. Settle & Farmer, architects, Ulverston :—

Bell & Usher, Coniston (accepted) ..	£963 0 0

EDINBURGH.—For erecting parapet wall and railing, laying out, &c., a plot of ground and forming new footpath at Edinburgh, for the Magistrates and Council. Mr. John Cooper, Burgh Engineer, 1, Parliament-square, Edinburgh :—

William Wilson	£285 9 9
P. Bell & Son	265 0 0
William Gerard	260 0 9
John Lownie	233 0 0
John Petrie & Co.	230 0 0
Wm. Cowie & Son	205 0 0
James Young & Sons (accepted)	205 0 0
John Menzies & Son	204 0 0

[All of Edinburgh.]

HAVERHILL.—For building chapel and school buildings at Haverhill. Messrs. C. G. Searle & Son, architects, 12, Southwark-street, S.E. :—

Dobson	£3,478 0 0
Willmott & Sons	3,386 0 0
Coulson & Lofts	2,678 0 0
Mason & Son	2,650 0 0
Crowe	2,644 0 0
Thoday & Son	2,638 0 0

HOLLINGBOURN (Kent).—For the enlargement, &c., of the lavatories at the Workhouse, Hollingbourn, for the Union Guardians :—

Jas. Wood & Son	£111 0 0
Jno. C. Brooks	98 17 0
Norval Marley	98 10 0
H. J. Knowles, Bearsted (accepted) ..	93 0 0

HORNSEY.—For the supply of about 200 cast-iron lamp columns, for the Hornsey Local Board. Mr. T. de Courcy Meade, Engineer and Surveyor :—

	Per ton.
John Cullabine & Co.	£12 19 0 !
Lambert Bros.	12 10 0
W. Macfarlane & Co.	12 5 0
Robert Dempster & Sons	11 0 0
E. A. & H. Sandford	11 0 0
The Lion Iron Foundry	10 5 0
The Staveley Coal and Iron Co.	10 0 0
J. Williamson & Co.	9 15 0
P. T. Woodruff & Co.	9 10 0
S. Pontifex & Co.	9 9 0
Francis Helm, Lim.	9 0 0
Bayliss, Jones, & Bayliss	8 17 6
W. H. Spencer & Co.	8 15 0
Bailey, Pegg, & Co.	8 12 6
G. Waller & Co.	8 12 0
A. Attwood & Co.	8 11 8
Blaikie Bros.	8 10 0
Sydney G. Edwards	8 10 0
The Hardware Stores	8 9 6
Robert Taylor & Sons	8 6 8
Goddard, Massey, & Co.	8 5 0
The Thames Bank Iron Co.	8 5 0
Geo. Smith & Co.	8 3 4
Geo. W. Sharpe & Co.	8 0 0
Samuel Wright	8 0 0
Jukes, Coulson, Stokes, & Co.	7 15 0
R. Bradley & Co.	7 10 0
Thos. E. Kershaw	7 10 0
Universal Patent Pulley Co.	7 10 0
Woodhouse & Rawson, United	7 10 0
Newton Chambers	7 10 0
B C Badham & Co.	6 18 9
F. Bird & Co., London (accepted)	6 18 6
Newall & Barker	6 7 6 !

KESTON (Kent).—For additions and alterations to the National Schools, Keston-common, Kent, for the Committee. Quantities by Mr. Henry Bushell, 1, Finsbury-circus, E.C. :—

	Main Estimate.	Separate Estimate.	Total.
Crossley	£360 ..	£45 ..	£405
Smith, Bromley-common.	354* ..	40 ..	394
Borer	349 ..	41 ..	390

* Accepted.

LISMORE (Ireland).—For constructing a weir and in-take tank and supplying and laying pipes, at Cappoquin Demesne, Lismore, Ireland, for the Lismore Union Guardians. Mr. Michl. R. Hynes, engineer, Owbeg, Lismore :—

J. Donohoe	£544 0 0
Michl. Connell	529 0 0
Pat. Connell	490 0 0
H. E. Fitz-Gerald	495 0 0
Geo. Stokes	495 0 0
Jerh. Dempsey, Stradbally (accepted)	427 10 0

LONDON.—For the erection of two cottages and shop at Canning-place, Grove-lane, Camberwell, S.E., for Mr. W. Coles. Mr. S. C. McMurdie, architect, 25, Wildash-road, East Dulwich :—

F. P. Treweeke	£588 0 0
H. H. Hollingsworth	555 0 0
King & Son	521 12 6
A. & W. Garnar	495 0 0
J. Watson & Co.	455 0 0
Coleman	394 10 0

LONDON.—For erecting gymnasium at the People's Palace, Mile End-road, for the Worshipful Company of Drapers. Mr. Charles Reilly, architect, 23, St. Swithin's-lane, E.C. :—

Hall, Beddall, & Co.	£6,317 0 0
Brown, Son, & Blomfield	6,155 0 0
Mowlem & Co.	6,055 0 0
Mark Patrick & Son	6,014 0 0
Colls & Sons	5,920 0 0
Ashby & Horner	5,848 0 0
Williams & Son	5,717 0 0
Perry & Co.	5,615 0 0
W. Downs	5,598 0 0
J. Woodward	5,038 0 0

LONDON.—For constructing sewer, Munster-road, Fulham, for the Vestry. Mr. J. P. Norrington, Surveyor :—

S. Jones	£4,258 0 0
C. W. Killingback & Co.	3,890 0 0
Nowell & Robson	3,575 0 0
L. Bottoms	3,550 0 0
J. Fell	3,560 0 0
Tomes & Wimpey	3,290 0 0
E. Rogers & Co.	3,200 0 0
B. Cooke & Co.	3,085 0 0
W. Neave & Son	3,071 0 0
J. Mears	2,950 0 0
J. H. Neave	2,894 0 0
R. Mayo, Limited	2,245 0 0
S. Saunders	2,125 0 0

LONDON.—For rebuilding No. 90, Leather-lane, E.C. Mr. F. Hammond, architect :—

Ashby & Horner	£2,222 0 0
Lawrence	2,153 0 0
Martin & Wells	2,136 0 0
Roberts	2,079 0 0
Dove Bros.	2,015 0 0
Patman & Fotheringham	2,008 0 0
Hosegood	1,968 0 0
Langler & Pinkham	1,866 4 6
Jas. Greenwood & Son	1,850 0 0

LONDON.—For making-up and paving new streets in the Parish of Fulham. Mr. W. Sykes, New Streets Surveyor :—

Coniger-road.

Killingback	£1,400 0 0
Nash	1,373 0 0
Greenham	1,350 0 0
Neave & Son	1,205 0 0
Rogers	1,179 0 0
Nowell & Robson	1,175 0 0
Tomes & Wimpey	1,059 0 0
Mears	1,035 0 0

Barons Court-road, Section 3.

Neave & Son	602 0 0
Nash	593 0 0
Killingback	590 0 0
Rogers	575 0 0
Greenham	573 0 0
Nowell & Robson	527 0 0
Mears	515 0 0
Tomes & Wimpey	512 0 0

Barons Court-road, Section 4.

Killingback	400 0 0
Neave & Son	360 0 0
Rogers	360 0 0
Nash	353 0 0
Greenham	345 0 0
Nowell & Robson	335 0 0
Tomes & Wimpey	329 0 0
Mears	310 0 0

Lillie-road, Section 4.

Neave & Son	483 0 0
Nash	459 0 0
Greenham	446 0 0
Rogers	409 0 0
Nowell & Robson	389 0 0
Tomes & Wimpey	379 0 0
Killingback	339 0 0

Perham-road, Section 2.

Neave & Son	386 0 0
Killingback	370 0 0
Rogers	343 0 0
Nash	343 0 0
Nowell & Robson	335 0 0
Greenham	320 0 0
Mears	300 0 0
Tomes & Wimpey	272 0 0

Lurgan-avenue.

Nash	1,411 0 0
Killingback	1,099 0 0
Neave & Son	1,012 0 0
Tomes & Wimpey	1,005 0 0
Nowell & Robson	969 0 0

Greyhound-road, Section 4.

Neave & Son	176 0 0
Nash	169 0 0
Greenham	150 0 0
Nowell & Robson	132 0 0
Tomes & Wimpey	129 10 0
Killingback	125 0 0

Peterborough-villas.

Nash	225 0 0
Greenham	215 0 0
Killingback	205 0 0
Rogers	200 0 0
Nowell & Robson	200 0 0
Neave & Son	188 0 0
Tomes & Wimpey	188 0 0

LONDON.—For the erection of new warehouse, Dock-street, E., for Messrs. Thos. Bear & Sons. Mr. E. A. B. Crockett, architect :—

Holland & Hannen	£5,015 0 0
Ashby & Horner	4,427 0 0
Nightingale	4,390 0 0
Jas. Greenwood & Son (accepted) ..	4,382 0 0
Outhwaite	4,324 0 0

LONDON.—For alterations to the "Duke of Cambridge," Kilburn. Mr. W. T. Farthing, architect, 46, Strand :—

G. Godson & Sons, Kilburn (accepted)	£286 0 0

LONDON.—For alterations, decorative and sanitary works to house and stables, at 55, Westbourne-terrace, Hyde Park, W. Mr. J. Emes, architect, 151, Ebury-street, S.W. :—

M. E. Cranstone, 35, Spring-street, Paddington (accepted)	£700 0 0

LONDON. — For rebuilding No. 63, Moscow-road, Bayswater, for the Metropolitan Railway Surplus Lands Committee. Mr. John E. Still, architect, 50, Finsbury-square, E.C. :—

Langridge	£622 0 0
Brewer	560 0 0
Castle & Sons	472 0 0
Roffey, Putney	455 0 0

LONDON.—For new top story, and contingent works, at 49, Eaton-terrace, S.W. Mr. J. Emes, architect, 151, Ebury-street, S.W. :—

C. Bowden & Co., 79, Elizabeth-street, Eaton-square (accepted)	£240 0 0

MARDY (Mon).—For the erection of twenty-eight cottages, at Mardy, Rhondda Fach, Monmouthshire. Mr. Wm. Thomas, architect, Mining Offices, Bryn-Awel, Aberdare :—

Edward David & Son, Treherbert	£3,971 0 0

MORTLAKE.—For building cottages, stabling, &c., at the pumping station, Mortlake. Mr. J. C. Mellins, engineer, 232, Gresham House, Old Broad-street, E.C. :—

Abraham Kellett	£3,500 0 0
S. Polden	3,227 0 0
Soole & Son	2 720 0 0
George Wade, Chelsea (accepted)	2,117 0 0
Alaway Bros.	1,975 0 0

NEWARK (Notts).—For the erection of cellars, cask-sheds, and engine-house, for Messrs. Warick & Richardson, brewers, Northgate. Mr. George Shephard, architect. Quantities supplied :—

Wright & Sons	£2,878 0 0
Otter & Broughton	2,822 0 0
Woodsend	2,350 0 0
S. & W. Pattinson	2,300 0 0
H. S. & W. Close	2,248 0 0
Vickers	2,205 0 0
Cosham	2,200 0 0
Baines	2,168 0 0
Smith & Lunn	2,105 0 0
Brown & Sons	2,102 0 0
Wheatley & Maule	2,095 0 0
Mackenzie & Sons, Nottingham*	2,080 0 0

* Accepted.

PAIGNTON.—For the erection of stabling, &c., for Mr. Washington Singer. Mr. W. G. Couldrey, architect :—

J. Mudge	£613 4 6
H. Webber	565 18 0
C. & R. E. Drew	558 0 0
Rabbich & Brown (accepted)	536 5 0

SOUTHAMPTON.—For alterations and additions to "Windsor Brewery," Southampton, for Messrs. Hine Bros. Mr. W. H. Mitchell, architect, Southampton :—

Dyer & Sons	£1,050 0 0
Jukes, T. J.	1,039 10 0
Bull, Sons, & Co.	1,016 0 0
H. Stevens & Co.	989 0 0
Morgan, Isted, and Morgan	978 0 0
J. Crook & Son, Northam, Southampton (accepted)	977 10 0

TOTTENHAM.—For erecting swimming-bath and gymnasium, at the Tottenham High School for Girls. Mr. Charles Reilly, architect, 23, St. Swithin's-lane, E.C. :—

Norton & Son	£4,286 0 0
Colls & Son	4,239 0 0
Ashby & Horner	4,187 0 0
Ashby Bros.	4,100 0 0
Williams & Son	4,077 0 0
W. Downs	4,020 0 0
Dove Bros.	3,945 0 0
S. & J. Jerrard	3,939 0 0
John Woodward	3,779 0 0
Brown, Son, & Blomfield	3,652 0 0
Humphreys & Son	3,650 0 0

TOTTENHAM.—For alterations and repairs at the "Enterprise" Club, Tottenham. Mr. John Pinder, architect, Tottenham :—

H. Duffill, Stamford-hill	£173 0 0
T. Bruce, Tottenham	150 0 0
J. Linzel, Tottenham	149 0 0

TOTTENHAM.—For works at the "Duke of Cambridge," West Green, Tottenham. Messrs. Fletcher & Migotti, architects :—

Ogden	£660 0 0
Voller	329 0 0
C. Brown	356 0 0
Collins	336 0 0
Salt (accepted)	329 0 0

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TO CORRESPONDENTS.

W. & H.—L. S.—H. T. H.—G. W. (no space this week).—J. T. M.—G. F. H.—M. C. & Sons (we could not print such a statement except as an extract from a published report of the case before a magistrate).—A. H. S.—P. & F. C. (entirely out of the scope of this paper).—W. D. (amounts should be sent).—C. & Son (one of the lists appeared last week).—J. J. (amount of accepted tender should have been sent).—T. L. (too small in amount).—M. & K. (ditto).—"Dalston" (no sender's name).—C. F. K.—W. P. B. (next week).

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

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